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REVIEW

OF

FOREST ADMINISTRATION

IN

BRITISH INDIA

FOR THE YEAR

1891-92.

BY

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CHAPTER I.

EXTENSION AND ORGANIZATION OF THE FOREST AREA.

I.—Alterations of Area.

In Part II of the Famine Commission Report of 1880, it was pointed out that up to that time only about 24,000 square miles of forest in all India had been absolutely protected, and that much remained to be done in dealing with private rights in the as yet unsettled areas which belonged to the State, or in which the State had proprietary interests. That much has been done since the Famine Commission Report was framed may be gathered from the following table showing, in square miles, the area of reserved forest in each province :—

Province.	In 1879-80.	In 1891-92.	Increase in 1891-92.	Decrease in 1891-92.
Bengal	2,945	5,211	1,800	...
North-Western Provinces and Oudh	3,279	3,768	455	...
Punjab	795	1,715	772	...
Central Provinces	2,535	19,680	17,145	...
Burma (Lower)	1,612	5,615	3,327	...
Burma (Upper)	...	1,059	1,059	...
Assam	2,015	3,612	1,597	...
Coorg	220	113	...	120
Ajmere	101	139	17	...
Baluchistan	...	82	82	...
Andamans	...	...	...	....
Total	13,502	40,994	27,492	...
Berar	1,388	1,256	...	132
Total Bengal Presidency	14,890	42,250	27,360	...
Madras	771	7,175	6,404	...
Bombay	7,904	10,318	2,414	...
Grand Total	23,565	59,743	36,178	....

I have intentionally included in the above statement only the areas of reserved forests; for the possession of protected and unclassed forests does not in my opinion rest on a sufficiently stable basis. Even as regards protected

forests, the power of interference in their management is to limited. The areas, however, at present under the control of the Forest Department are not limited to reserved forests; and in order to show the extent to which they are augmented by protected and unclassed State forests, I append the following table:—

Province.		Forest area in square miles.				Percentage of Forests to whole area of Province.	Percentage of Reserves to whole area of Province
Name.	Area, in square miles.	Reserved	Protected.	Unclassed State.	Total.		
Bengal	150,717	5,211	2,161	4,534	11,926	8	3
North-Western Provinces and Oudh	107,441	(a) 3,768	94	54	3 916	4	3½
Punjab	106,613	(b) 1,715	481	(c) 3,874	6,070	6	1½
Central Provinces	86,501	19,680	.	393	20,073	23	22¾
Burma (Lower)	87,220	(d) 5,615		...	(d) 5,615	6½	6½
Burma (Upper)	77,296	(e) 1,059	(f) 16,461	.	17,520	22	1
Assam	45,350	3,612	912	5,435	9,959	22	8
Coorg	1,583	113	742		855	54	7
Ajmere	2,711	139	.	* 8	147	5	5
Baluchistan	..	82	..	.	82		..
Andamans	1,089	...	...	1,957	1,957	98	
Total	667,421	40,904	20,871	16,255	78,120	(g) 12	6
Berar	17,711	1,256	**1,005	2,175	4,436	25	7
Total Bengal Presidency.	685,132	42,250	21,876	18,430	82,556	(g) 12	6
Madras	(h) 84,880	(i) 7,175	(j) 9,414	1,304	17,893	21	8
Bombay	124,352	10,318	4,209	...	14,527	11½	8
GRAND TOTAL	894,364	59,743	35,489	19,734	114,966	(g) 13	7

Remarks.

(a) Includes 78 square miles of *Leased* Forests.
(b) Includes 319 square miles of *Leased* Forests
(c) Includes 224 square miles of *Leased* Forests
(d) Includes 161 square miles of *Taungya* areas
(e) Includes 113 square miles of *Taungya* areas.
(f) Exclusive of the area of India rubber forests, of which it is impossible to form any estimate
(g) Baluchistan left out of account
(h) Exclusive of the areas of Feudatory and Tributary States, Zemindaris and whole inam villages.
(i) Includes 99 square miles of *Leased* Forests.
(j) Includes 93 square miles of *Leased* Forests
* Village lands managed by the Department, but not yet brought under the Ajmere Forest Regulation.
** The area of "District Reserves"

2. I have already pointed out in previous reviews that the gross extent of forest managed by the Department does not comprise the whole area of forest lands in possession of the State

In many instances these lands, which are at present still outside the sphere of the Department, are clad with tree-forest; in others they are grazing-grounds with hardly a bush on them; and between these two extremes every variety is represented. It is, in my opinion, desirable that some of them should be brought under conservative forest treatment, either because they are or will be valuable on account of the forest-produce they are able to yield, or, with special reference to forests occupying hill slopes, for the protection of underlying cultivated lands. Some tracts, however, should doubtless be used primarily as grazing-grounds, and the tree-growth on them is of little or no importance: others again are either by nature intended for permanent cultivation or can be adapted thereto by irrigation works. Such lands must ultimately serve the purpose for which they are best fitted.

It is obviously desirable, however, whatever may be the character of such lands and the natural growth thereon, and whatever the purpose which they are intended to serve, that the power of Government to interfere with their management should be finally settled, and, where this has not been efficiently secured, it can best be done under the Forest Law. I have in previous reviews pointed out that settlements under this law in no wise affect the future use of the settled areas.

The fact that no progress has been made during all these years in the creation of village forests is, in my opinion, due to defects in the existing Forest Law, which seems unnecessarily complicated on this point. The same law has also prevented any practical effect being given to the extension of State control

over forests and land not being the property of Government, as it gives the owners of such lands the right to demand the acquisition thereof by Government.

I mention these facts only incidentally, in order to show how necessary it is that Government should record the settlement of its own possessions in a manner as safe and as complete as possible.

3. The following table shows the alterations which took place during 1891-92 in the area controlled by the Forest Department, and exhibits for the year a net increase of 2,205 square miles :—

Province.	Alterations in area, in square miles, during 1891-92.								Remarks.
	Reserved Forests.		Protected Forests.		Unclassed State Forests.		Total.		
	Increase.	Decrease.	Increase.	Decrease.	Increase.	Decrease.	Increase.	Decrease.	
Bengal	57 (a)	35 (b)	...	28	500 (c)	...	557	63	(a) 87 square miles obtained by rectification of previous area figures.
North-Western Provinces and Oudh.	197	31	...	...	8	86	205	117	(b) 29 square miles due to rectification of previous area figures.
Punjab	(d) 41	20	131	4	(e) 4	(f) 46	176	70	(c) 1 square mile obtained by rectification of previous area figures.
Central Provinces	(g) 3	3	...	...	...	...	3	3	
Burma (Lower)	12	...	...	...	...	...	12	...	(d) 14 square miles obtained by rectification of previous areas figures.
Burma (Upper)	1,024	...	2,275	1,828	...	35	3,299	1,863	
Assam	10	...	...	4	17	52	27	56	(e) 3 square miles obtained by rectification of previous area figures.
Coorg	...	134	134	1	...	...	134	135	
Ajmere	(h) 1	(i) 2	...	...	...	...	1	2	(f) 14 square miles due to rectification of previous area figures.
Baluchistan	4	...	...	...	...	...	4	...	
Andamans	...	...	...	...	...	...	...	...	(g) 2 square miles obtained by rectification of previous area figures.
Net Total Increase or Decrease.	1,349	225	2,540	1,865	529	219	4,418	2,309	(h) Obtained by rectification or previous area figures.
Berar	122	2	29	37	75	36	226	75	(i) 1 square mile due to rectification of previous area figures.
Net Total Increase or Decrease, Bengal Presidency.	1,471	227	2,569	1,902	604	255	4,644	2,384	(j) 89 square miles obtained by rectification of previous area figures.
Madras	2,099	36	447	2,478	144	116	2,690	2,630	(k) 104 square miles obtained by rectification of previous area figures.
Bombay	170	22	(j) 102	212	...	...	272	234	(l) 30 square miles due to rectification of previous area figures.
Grand net Total Increase or Decrease.	(k) 3,740	(l) 285	(m) 3,118	4,592	(n) 748	(o) 371	(p) 7,606	(q) 5,248	(m) 89 square miles obtained by rectification of previous area figures.
									(n) 4 square miles obtained by rectification of previous area figures.
									(o) 14 square miles due to rectification of previous area figures.
									(p) 197 square miles obtained by rectification of previous area figures.
									(q) 44 square miles due to rectification of previous area figures.

Bengal.—The changes in the areas of the forests controlled by the Department were unimportant. The reserves were increased by the addition of 22 square miles from the protected forests, the extent of which was reduced by 28 square miles. The extent of unclassed forests, partially managed by the Department, was unaltered, and is estimated at 3 per cent. of the total provincial area. All classes aggregated 11,926 square miles, or nearly 8 per cent. of the gross provincial area. These figures do not include the Sonthal Parganas forests nor the unclassed forests in Chota-Nagpur and Chittagong. The Sonthal forests have been carefully examined and their future conservative management has been approved of by the Government of India; but, owing to financial considerations, the Secretary of State has for the present withheld his sanction to the necessary formation of a new Forest Division. The Chota-

Nagpur forests, though well known, are, under old revenue-settlements, infested with shifting cultivation, and this custom has long rendered futile any attempts to introduce a conservative forest management; but it is hoped that a systematic treatment of some of the forests will be introduced before long. Large areas of the more or less unexplored forests of Chittagong will be brought under departmental management as opportunities occur.

North-Western Provinces and Oudh.—Eighty-eight square miles, of which, however, two-thirds are on account of corrections of previous figures, were added to the gross area of all classes of forests. The principal reservation occurred in the Banda District, where 102 miles were added. It was not found possible to furnish the information, alluded to in the Review for 1890-91, regarding the area of State lands not controlled by the Forest Department. There are, however, still considerable areas of State forests in the eastern half of the Central Circle which are under the management of the Revenue authorities. They are practically unexploited as regards the public market, in order that their outturn may not interfere with the sales of produce from forests under the control of the Forest Department.

Punjab.—In this case also, the modifications in the area-returns were due in part to rectification of previous figures. There was a slight increase to the reserved area, principally in the leased forests of Bashahr, the net addition for the province being 7 square miles. The scheme for the constitution of a reserved forest, irrigable from the Chenab canal, was advanced a stage, but no final decision was arrived at. The protected area was increased by the addition of the Khwarra and Zira forests in the Kohat District, area 131 square miles. It had for some time been contemplated to transfer the management of the forest lands in the "bars" to the Forest Department, but during the year it was decided to retain the control in the hands of the Revenue officials. The necessity for this may be open to argument; but, considering that without a thorough revolution in their management and utilisation, these bar-lands can exercise but a very indifferent climatical and physical influence, the question is not so important as would appear at first sight. Moreover, artificial irrigation extends its beneficial influence faster and faster on the lands concerned.

Central Provinces.—The alterations in area were unimportant, the gross extent of all classes of forests, *viz.*, 20,073 square miles, remaining unchanged. This great area may, as the Chief Commissioner stated in his review, be sub-divided for working purposes into (A) forests strictly conserved, (B I) forests available for the extension of cultivation, and (B II) areas which have still to be classified between the preceding heads. The Government of India have agreed that in some localities the forest area may possibly be too extensive, and that in such places it may be advisable to excise certain well-defined areas which are suitable for permanent and self-supporting cultivation. As yet, however, little progress has been made, owing partly to the inadequacy of the forest staff in the sub-division of the latter class of forests, and partly no doubt to the failing demand for lands by settlers, who wish to take up areas for *bonâ fide* agricultural purposes, and not merely in order to obtain the forest produce on the ground. The following table compares the figures (square miles) for the years 1890-91 and 1891-92 :—

Circle.	1890 91.				1891-92.			
	A.	B I	B II.	Total	A.	B I.	B II.	Total.
Northern .. .	3,900	655	5,524	10,079	3,945	656	5,478	10,079
Central . . .	5,131	6	4,464	9,601	5,244	9	4,348	9,601

Lower Burma.—In the Pegu Circle 12 square miles were added to the reserves, and enquiries were made with a view to the further reservation of a large area.

In *Upper Burma* considerable progress was made in constituting reserved forests, 1,024 square miles being notified, while preliminary measures for the reservation of 1,833 square miles were taken. In all 3,978 square miles were awaiting reservation at the close of the year. To the protected class 447 square miles were added. The total area of reserved forests in the province was, therefore, increased by 1,036 square miles, and the gross extent, excluding Karen areas, amounted to 6,100 square miles or 4 per cent. of the total area of the Province.

Assam.—Ten square miles were added to the reserved area. Exclusions from other classes resulted in a net decrease in the gross area of 28 square miles. As the class of 'protected

forests' does not exist under the recently enacted Forest Regulation, the Government of India, in reviewing progress, assumed that it would be decided to what extent the 912 square miles previously classed as 'protected' could be included in the reserved category, and further pointed out that the plethora of forest existing in the province should be taken advantage of in order to increase the area of the reserves, after which disforestation might be resorted to if occasion arose.

Coorg.—The total forest area remained almost unaltered; but 134 square miles of reserved forest, the constitution of which was ascertained to be legally defective, were placed temporarily in the category of protected forests.

Ajmere.—No material alteration took place in the extent of forest under regular management. The draft Regulation, referred to in the Review for 1890-91, for affording aid in the protection of woods and grazing-grounds other than State forest, became law and was introduced on the 1st April 1892, and with reference to it the question of extending the area of village forest received special attention, although no actual additions to that class were made.

Andamans.—The forests were reported as 1,957 square miles in extent, or 32 square miles less than the gross area of the main islands. This 32 square miles is the area of the village and other sites to which small additions are made yearly by clearing the forests. A noteworthy occurrence was a violent storm which burst over the islands in November and overthrew nearly one-half of the trees growing on the area affected, besides interfering seriously with the conduct of the operations of the Department.

Baluchistan.—An addition of only 4 square miles, or 5 per cent. of the previous total, was made to the area of State forest.

Berar.—The demarcated State forests were increased by 120 square miles, of which 68 were additions to the important reserves of Amba-Bárwa and Chikalda in the Melghát, and the remainder transfers to the reserves from other classes. The net increase for all classes of forest was 151 square miles, the gross area at the close of the year amounting to 25 per cent. of the provincial area, or 4,436 square miles.

Madras.—To the reserved area were added 2,063 square miles of forest, mainly from the category of "reserved lands," *i.e.* lands of which the reservation is contemplated, the extent of the latter being reduced by 2,031 square miles. At the close of the year there were 7,175 square miles of reserved forest and 9,404 square miles of reserved lands, together with 1,301 square miles of other forests, which, however, it has been decided should no longer find a place in the returns. The 16,579 square miles, controlled by the Forest Department, amount to 32·9 per cent. of the total unoccupied area of the districts concerned. Individual district percentages vary from 3·1 to 74·0 per cent. The reserved forests amounted at the close of the year to 8 per cent. of the area of the Presidency administered by Government, and their proportionate distribution amongst the three circles is as follows:—Northern 7·91, Central 7·43, and Southern 16·44.

Bombay.—The changes in the area of forests controlled by the Forest Department consisted in the net addition of 148 square miles of reserved forests and the net diminution of 199 square miles of protected forest. The policy of a gradual transformation of forests of this latter class into finally settled reserves was adhered to, but the progress made during the year was slow.

The table exhibiting the changes of areas, as submitted by the Bombay Government, gives a wrong impression. It shows 83½ squares miles excluded from the area of reserved forest and 218 square miles from the area of protected forests; but, to a great extent, these figures represent a transfer from one circle to another, and no real change. The area excluded by disforestation and erosion amounts to only 22 square miles for reserved forests and 212 for protected forests.

II.—Forest Settlements.

4. A perusal of the various Provincial reports shows that the policy of securing a strictly legal settlement of reserved forests, which forms the basis of the forest laws of India, and in which Madras for years undoubtedly took the lead, is gaining ground. This is very satisfactory; and I take once more the opportunity of urging the principle for general adoption, and of pointing out that it in no way interferes with freedom of action on the part of Local Governments, either as regards the future treatment of the settled area, or with their powers to grant

concessions or even rights when this is considered equitable or, for reasons of agricultural policy, desirable.

The forest law most fully provides for these contingencies. Temporary privileges, changeable and terminable at the will of the Government, can be granted * either by executive order to the forest officer, directing him to permit certain specific acts, or by rules giving a general permission. Rights can be granted † permanently or for a fixed period within settled forest reserves with such limitations and conditions as the Government thinks fit.

In consideration of these conditions, which embrace such an entire freedom of action on the part of Local Governments, there would seem to be no reason why the strictly correct and legal interpretation of the forest law as regards forest settlements should not be adhered to in its entirety and in every instance. I have already, on other occasions, given it as my opinion that the records of each reserve should, in order to follow strictly the words as well as the sense of the law, contain the following entries :—

(1) Legal rights admitted under the forest settlement, with the necessary remarks regarding their limitation, commutation and extinction, as the case may be.

(2) Rights granted by Government under section 22 of the Indian Forest Act, or corresponding sections of other forest laws, with the necessary particulars as regards duration, limitation and conditions.

(3) Temporary concessions, changeable or terminable at the will of Government, granted under rules made by the Local Government.

(4) Standing orders to the Forest Department to permit certain specific acts.

The actual progress made in forest-settlements has not been equally satisfactory in all provinces. It is a matter of great importance that strenuous efforts should be made towards the completion of this the groundwork of all successful forest administration; for, so long as the transition state lasts, the time of the forest establishment is greatly taken up by settlement work and demarcation, and the staff cannot give proper attention to the sylvicultural, technical and financial development of the estates under their charge. Moreover, the uncertainties which surround the *status* of an unsettled area prevent the introduction of working-plans.

Bengal.—The re-settlement of the reserved forests, notified as such in previous years under section 34 of the Indian Forest Act, was proceeded with in the Darjeeling, Buxa and Jalpaiguri Divisions. The enquiry in the two latter localities was completed, with the result that no further rights were recorded. Elsewhere, 160 square miles of forest were in process of settlement, and 23 square miles were finally gazetted as reserves. Various important projects

* Indian Forest Act, 1878, section 25 (*a*) and (*b*) of penultimate clause.
Madras Forest Act, 1882, section 21 (*a*) and (*b*) of penultimate clause.
Burma Forest Act, 1881, section 27.
Upper Burma Forest Regulation, 1890, section 25 (*a*) and (*b*).
Assam Forest Regulation, 1891, section 26 (*b*) and (*d*).
Berar Forest Law, 1886, section 10 (*a*), (*b*) and (*c*).
British Baluchistan Forest Regulation, 1890, section 9 (*a*), (*b*) and (*c*).
Baluchistan Agency Forest Law, 1890, section 9 (*a*), (*b*) and (*c*).
Ajmere Forest Regulation, 1874, section 5.
Hazara Forest Regulation, 1893, section 6, clause 2.

† Indian Forest Act, 1878, section 22.
Madras Forest Act, 1882, section 18.
Burma Forest Act, 1881, section 22.
Upper Burma Forest Regulation, 1890, section 20
Assam Forest Regulation, 1891, section 21.
Berar Forest Law, 1886, section 6
British Baluchistan Forest Regulation, 1890, section 5.
Baluchistan Agency Forest Law, 1890, section 5.
Ajmere Forest Regulation, 1874, section 4.
Hazara Forest Regulation, 1893, section 4 (3).

for the protection of the forests in Chota-Nagpur, Orissa and Chittagong were under consideration during the year, and action was taken in the direction of inducing large landowners and Native Chiefs to conserve their forests to some extent. The administration of the Department under this head during the year was characterized by a marked degree of energy.

North-Western Provinces and Oudh.—In the *Central Circle*, considerable reservations of area were made in the Bundelkhand and Naini Tal Divisions. In other divisions, rights of user in forests already declared reserves under section 34 of the Forest Act were systematically enquired into.

No fresh settlements were undertaken in the *Oudh Circle*; but the Conservator reported on the unsatisfactory results attending the working of the Puránpur and Pilibhít forests, owing to the non-limitation or regulation of the rights to produce and of the manner in which such produce should be removed. He stated that unless remedial measures are soon taken, the Pilibhít forest, in which such rights exist, would shortly be destroyed. In connection with this subject, the Government of India, when reviewing the Conservator's report, pointed out once more that "a forest-settlement contemplates the acquisition by the State of an unassailable title in its forest property," and expressed satisfaction at the question now meeting locally with the attention which it merits.

Punjab.—Operations under this head were unimportant, and it was not found possible to dispose of the long-pending settlement of the Kangra, Kulu and Shahpur-Kandi forests.

Central Provinces.—A beginning was made in the execution of the very important policy, which has been approved of by the Supreme Government, of setting apart, for the extension of self-supporting and permanent agriculture, culturable portions of the forests, provided that the excised areas are of sufficient extent for the formation of complete villages, and that the reserved forests are not in this way needlessly cut up by cultivated plots. Little was done in this direction in the Southern Circle; but in the Northern Circle, greater success was attained, especially in the Mandla and Hoshangabád Districts. The State forest-property is almost entirely settled in this province and no new forest-settlements were carried out.

Lower Burma.—The most valuable and important forest areas in Lower Burma have been settled, but the opening out of the country renders of value forests which were not formerly of the same importance, and will necessitate additions to the large areas of reserves for some years to come. The scarcity of officers for the work again hindered progress in forest-settlement during the year under review. A small area of 12 square miles was added to the reserves in the Pegu Circle, and preliminaries to further large reservations were commenced. The most important amongst the areas awaiting settlement are cutch-bearing tracts in the Thayetmyo District, 74 square miles in extent, in which protective measures are urgently required in order to prevent the extermination of this species. With the same view, cutch was declared a reserved tree during the year, and the Government of India, after its close, expressed satisfaction at the manner in which this question is being dealt with.

In *Upper Burma* the work of forest-settlement resulted during the year in the highly creditable addition of 1,024 square miles. Extensive forest areas, aggregating 16,461 square miles, had been examined up to date and, with a view to final reservation, been placed under the Forest Regulation. Of this area, 2,189 square miles were notified as a preliminary step to a regular settlement; while over 587 square miles, previously notified, the settlement operations were completed. In reviewing the progress made, the Government of India commented on the large amount of forest-settlement work disposed of by local officers, and approved of the proposal to maintain an additional staff of Settlement Officers in order to expedite work during the open season. It was remarked that "a systematic forest administration can only be built up on the sound foundation of a permanent and final settlement of the property, which leaves no room for individual differences of opinion and permits officers to devote their whole energy and time to the technical administration of the State forests. These advantages seem to be fully recognized in Burma." As in Lower Burma, the protection of cutch attracted attention, and with this object changes in the forest rules were introduced with beneficial results.

Assam.—To the area of the reserves, 10 square miles were added by settlement, and 395 square miles of forest in the Sibságar and Nowgong Districts were notified as proposed reserves. The question of adding to the reserved area in the Garo Hills engaged the attention of the Chief Commissioner, though no actual steps in this direction were taken. In view of the opening out of Assam at no distant date by railways, the Administration must, as regards forest-settlements, look far ahead of the present requirements.

Coorg.—With the exception that certain forests had not been finally notified, the forest-settlement of the remaining forests was completed during the year at a cost of R2,023. After the close of the year the Government of India expressed satisfaction at the progress made under this head.

Ajmere.—The record-of-rights in the State forests was completed and remained at the close of the year under consideration, as were also proposals for the constitution as village reserves of 6,000 acres of waste land near Rajgurh. The constitution on a more extended scale of forests

of the last-mentioned category is contemplated under the powers conferred by Regulation I of 1892.

Andamans.—A beginning was made in the systematic selection and demarcation of areas which it is intended to maintain permanently as forest, and considerable tracts were demarcated accordingly, and were gazetted as reserved forests after the close of the year. This latter step was taken in accordance with the advice of the Inspector General of Forests, although no Forest Law exists in, or is considered to be required for, these islands.

Baluchistan.—Although facilities have recently been acquired, under the Baluchistan Forest Law and Regulation, for the constitution of State forests, but little advantage was taken of them during the year, and only 4 square miles were properly reserved. The slight progress made was attributed to different reasons, one of which was that the operations of the Department were necessarily limited pending the results of the Forest Conference which assembled at Quetta in December, and dealt with the question of the continued maintenance of a separate department for forest management in Baluchistan. The Government of India, however, in reviewing the work done during the year, declared that it was unnecessary to delay progress in the acquisition of State forests on this account, and that more energetic action might have been taken. It was pointed out that there is evidence of the rapidity with which the unreserved tracts are disappearing, and that the Forest Conference had recommended the extension of the reserved areas. The question of further reservation is to be systematically considered, the end in view being the prompt conservancy of all forests which it is possible and expedient to manage permanently for fuel and fodder. A very important step connected with future forest-settlements was the decision of the Conference above referred to, a decision endorsed by the Government of India, that the local Forest Department should be maintained and its scope of action extended.

Berar.—With the year 1891-92 closed the system of administration in force up to that time. The Berar Forest Law of 1886, and the rules thereunder for the management of the various classes into which the forests are to be grouped, which rules were sanctioned by the Government of India at the close of 1891, were locally introduced with effect from the 15th June 1892. The classification of the forests was advanced so far during the year that it was possible to withdraw the temporary restrictions, which were alluded to in the last Review, against allotting lands for cultivation. Besides the additions made to the area of the demarcated State forests, 71 square miles, all of which is available for the extension of cultivation, were added to the unreserved forests.

Madras.—The forest area belonging to the State, which has not as yet been finally settled, is still considerably larger than the reserved area; and it is worthy of note that 7,384 square miles are still under settlement. This area includes 3,613 square miles, regarding which the settlement reports have been submitted, and 2,495 square miles finally settled but not yet notified. The progress in forest-settlements was much more satisfactory than in previous years, 2,063 square miles having been notified as reserved, against a total of 2,800 square miles notified during the four years ending 1890-91. Nevertheless, the Governor in Council drew the conclusion that there has been great delay in the conduct of settlement; but although the report of the Board of Revenue justifies this conclusion, the fact should be remembered that the Madras forest-settlements when completed are among the best if not the very best in the Empire.

Bombay.—The progress made in forest-settlements, as shown by the returns submitted by the Conservators, has not been satisfactory. It should be noted, however, that during the year the settlement of rights on considerable areas was finally disposed of, but that these areas could not be placed to the credit of the year, because the final notifications under section 19 of the Forest Act had not issued. The exceptional unhealthiness of the season also greatly delayed the work. The policy of transforming the protected forests into permenently-settled estates was adhered to, which in itself is a satisfactory feature of the forest administration. The forest settlement staff was strengthened by the appointment of a special Forest Settlement Officer in Sind, and a similar appointment is under contemplation for Kanara. Greater progress may consequently be expected in future years

III.—Demarcation.

5. The progress made in demarcation may be considered satisfactory.

Bengal.—Important changes in the forest boundaries were in process of being carried out in the Puri and Angul Divisions. These changes comprise a number of exclusions from the reserves in Puri and of re alignments in Angul, as well as the settlement of the boundaries common to certain reserves in Singhbhoom and Angul and Tributary States of Orissa. The total length of reserved forest boundaries was reported to be 3,536 miles, of which 70 miles are sufficiently demarcated with pillars, etc., and 2,066 miles requiring to be cleared periodically of jungle, of which 1,970 miles were cleared during the year. Neglecting the new re-alignments referred to, only 12 miles of boundary remained for demarcation at the close of 1891-92. The expenditure under this head was R8,493 as against R5,748 in the previous year.

North-Western Provinces and Oudh.—The work done under this head was unimportant; but the Conservator in Oudh reported that in his circle the demarcation was very defective, and urged that it should be put right in connection with the operations of the Forest Survey Branch, and to this the Local Government has agreed. The total expenditure was R7,963 as against R8,584 in 1890-91.

Punjab.—Demarcation was attended to, especially in the hill divisions. The expenditure incurred was R3,618, as against R4,542 in 1890-91.

Central Provinces.—The excision of culturable lands from the forests will necessitate a great deal of boundary-revision work. But otherwise operations under this head, except in two districts, were practically completed during the year. In the Northern Circle 467 miles of new lines were opened, and 596 miles of artificial boundary were added in the Southern Circle. The total expenditure was R9,508 (as against R9,902 in the previous year), of which R6,142 was incurred on new work. At the close of the year, the Chief Commissioner again forcibly drew attention to the importance of preparing boundary-registers of the forest, as a result of which greater progress in this respect may be looked for in future.

Burma.—In the Tenasserim Circle of Lower Burma the work done under this head was unimportant: it included boundary work in the Salween-Attaran Division in connection with the Forest Survey of the Thaungyin valley reserves. Boundary repairs were carried out to some extent in the Pegu Circle, at a cost of R4,443, the charges in Tenasserim being R709 only, which sum, however, did not cover the total cost of the work done. In Upper Burma boundary work was almost wholly confined to the Katha and Pyinmana Divisions, in which a number of reserves were delimitated at a cost of R3,758. The general sufficiency or otherwise of the forest demarcation was not reported upon.

Assam.—The existing demarcation was maintained at a cost of R4,074, representing expenditure on 1,103 out of a total of 1,161 miles of artificially demarcated boundaries, the average cost per mile of boundary repaired being R3-11-1, or one anna above the rate for 1890-91. In the Darrang Division the rate was as high as R9-2-10 per mile, regarding which the Local Government has called for a report. The Conservator has again omitted to distinguish between charges on new work and on maintenance. He pointed out that "a large proportion of the Assam forest boundaries are fortunately natural, being represented by roads, streams or rivers, sufficiently well-defined, and in most cases sufficiently permanent in their location to render any artificial demarcation unnecessary

Coorg.—The rectification of, and repairs to, forest boundaries received special attention, and a great deal of work was done. In the older forests the boundary lines were widened in places and cleared throughout over a total length of 330 miles. A large quantity of numbered boundary monoliths were also set up at a cost of R1-6-9 each. In the ghât forests the demarcation was pushed on in advance of the survey, and 25 miles of cardamom-malé limits were defined. The total cost under this head was R4,128 as against R2,669 in the previous year.

Ajmere.—The boundary pillars in all the reserves were maintained in good repair, and along the Marwar frontier the 30-foot lines, referred to in the previous Review, were continued for a length of 24 miles at a cost of R318.

Andamans.—A commencement was made in the demarcation of the forests in connection with the selection and reservation of the more valuable tracts referred to in the last section. The total length laid down was 13 miles, costing R718. Some of the work, in cutting a boundary line across the island, was of an extremely difficult nature.

Baluchistan.—The boundary work done was insignificant. The proposed Thalli forest was temporarily demarcated.

Berar.—Rupees 2,444 were expended under this head, the total for 1890-91 having been R1,533 Attention was paid to the subject generally, and it was expected that the demarcation of the South Berar forests would soon be completed. When reviewing the Conservator's report, the Government of India drew attention to the desirability of special efforts towards the securing of a satisfactory demarcation, now that the various classes of forests under the recently introduced law have been decided upon.

Madras.—The information given under this head in the administration report, which was prepared by the Board of Revenue, is somewhat incomplete. Under permanent work, 2,429 miles were demarcated at a cost of R35,723, while, as a preliminary to notifying proposed reserves under section 4 of the Forest Act, 1,864 miles were marked out at a charge of R11,015. According to the Board's report the total length permanently demarcated up to the close of 1891-92 amounted to 14,249 miles, at a cost-rate per mile of R12-1-2. The corresponding figures for preliminary work are 7,395 miles and R8-14-8. On the whole, satisfactory progress was made during the year in this branch of forest organization, the importance of which is fully appreciated. A striking feature in the figures presented by the Board is the high cost of preliminary demarcation, in itself and relatively to the cost-rate for permanent work; and it would be interesting if further information on this point could be forthcoming in future reports.

Bombay.—The demarcation of forest estates was pushed on with considerable vigour. The total expenditure under this head was R40,388. The matter is fully and clearly reported on in the Northern Circle. In the Southern Circle report a summary is, as usual, wanting.

IV.—Surveys.

6. The experience gained year by year confirms the truth of my assertion that the great majority of our working-plans in India must be based on area and sylvicultural prescriptions, rather than on volume of material; and it is consequently satisfactory to note that the area topographically surveyed during 1891-92 amounted to 3,353 square miles, as against 2,770 square miles in the preceding year and 2,373 square miles during 1889-90. These extensive surveys, which doubtless absorb a considerable amount of the annual revenue, cost during the year R3,55,000; but the expenditure, like that on forest-settlements, is not recurring, and the sooner the work is completed the better.

I am decidedly of opinion that every effort should be made to increase the annual outturn to 4,000, and if possible 5,000, square miles per annum, so as to enable us to bring the whole of our State forests as early as possible under a systematic management. I cannot avoid noticing, as an unsatisfactory feature in our forest surveys, that the production of maps has not kept pace with the field work; but I am at the same time able to state that the Surveyor-General and myself have devised a plan by which this drawback will, it is hoped, be removed in future years. Until our proposals are adopted, the difficulty will be overcome by the advance issue of silver or blue-prints, which no doubt will meet all immediate requirements for working-plans maps, but which involve at the same time an additional outlay. The following table exhibits in a convenient form the areas surveyed during the year by the different agencies, as well as the cost-rates per square mile. It will be observed that, with the exception of the 8 and 4 inch surveys in Bombay, there has been in every instance a reduction in the rates:—

Presidency or Province.	Surveyed with topographical detail on the following scales.												Total topographical surveys.		Survey of boundaries only	
	4″ = 1 mile.				8″ = 1 mile.				16″ = 1 mile.							
	1891-92.		1890-91.		1891-92.		1890-91.		1891-92.		1890-91.					
	Area surveyed.	Cost-rate per square mile.	Area surveyed.	Cost-rate per square mile.	Area surveyed.	Cost-rate per square mile.	Area surveyed.	Cost-rate per square mile.	Area surveyed.	Cost-rate per square mile.	Area surveyed	Cost-rate per square mile.	1891-92.	1890-91.	1891-92.	1890-91
	Sq. ms.	R	Sq. ms.	R	Sq. ms.	R	Sq. ms.	R	Sq. ms.	R	Sq. ms.	R	Sq. ms.	Sq. ms.	Linear miles.	Linear miles.
Bengal	327	(a) 129	174	(a)138	..	...	...	...	...	...	...	...	327	174	...	226
North-Western Provinces and Oudh	...	...	35	(a) 87	..	...	...	...	...		...	...	..	35	...	19
Punjab	160	53	158	62	...	...	.	...	...	...	...	...	160	158	...	45
Central Provinces(e)	483 477	(a)164 (b)47	461 483	(a)170 (b)48	...	...	..	..	149	(b) 47	108	(b) 48	1,109	1,082	1,767	1,580
Burma (Lower)	226 128	(a)175 86	167 ...	(a)175 ..	..	...	..	...	...	.	...	...	354	167	477	340
Assam	307	42	180	44	...	...	...	...	...	...	...	...	307	180	53	101
Madras	659	(a)97	465	(a)112	...	...	...	...	...	...	...	.	659	465	253	266
Bombay	195	(a)126	124	(a)112	202	(a)186	391	(a)140	40	(a)187	22	(a)193	437	530	496	596
Total (d)	2,962	...	2,247	...	202	...	391	...	189	...	130	...	3,353	2,770	3,046	3,479

(a) Survey of India Department rate; other rates are those of Forest Survey Branch.

(b) Average cost of both 4″ and 16″ scales.

(c) Cost-rate includes expenditure on classification of forests and soils.

(d) In addition, various surveys were carried out in the several provinces by local agency, but their inclusion in this statement has not been found possible, owing to the details reported being in most cases insufficient.

Bengal.—The topographical survey on the 4-inch scale of the reserved forests of the Western Duars (Buxa and Jalpaiguri Forest Divisions) was continued during the year by the Survey of India Department, the area surveyed in detail amounting to 327 square miles. Many obstacles to the survey were overcome; some fires occurred, elephant grass was much met with in the more open jungles, and in the denser forests, accurate work was rendered laborious and slow by the tangled creepers and undergrowth. Good progress was however made. Mapping work was pushed on, and the Conservator reported that the actual survey was finished soon after the close of the year.

North-Western Provinces and Oudh.—The circle reports are misleading, as in them reference is made to work done during the previous survey-year of 1890-91. No surveys were made by the Imperial Survey Department, but in all three circles a small expenditure was incurred on departmental work, connected partly with the correction of existing maps. With reference to the preparation of working-plans in the Oudh Circle, the Conservator reported that a survey of his forests on the 4-inch scale was urgently needed, and it was subsequently decided that this work should be commenced during 1892-93 by the Forest Survey Branch.

Punjab.—Surveys on the scale of 4″ = 1 mile and 1″ = 1 mile of the Government forests in Kangra proper and in Kulu were continued by the Imperial Survey Department, and a special survey on the 4-inch scale of the reserved forests in the various Simla Hill States was commenced. In Kangra 51 forest blocks were surveyed, either wholly or in part, and in Kulu 4 blocks were completed. The forest areas surveyed or triangulated have not been separately given in the reports (except for the Simla Hill States forests, of which 45 square miles were surveyed), probably because the work is not wholly "forest" survey. The above statement is consequently incomplete as regards surveys carried out by No. 18 Party. An endeavour will be made to obtain correct information for future issues of this review. The survey of the Bashahr State was resumed by the Imperial Forest Survey Branch, and the progress made is indicated in the above statement. As previously, the nature of the forest-growth was recorded by the surveyors with a view to the preparation of stock-maps. The cost-rate was reduced from R62·1 to R53·3 per square mile. The Conservator reported that surveys were made and new maps prepared of various forests in the Jhelum, Lahore and Chenab Divisions in connection with the Land Revenue Survey. Surveys carried out by departmental agency were insignificant.

Central Provinces.—The Forest Survey Branch was employed, in continuation of the previous season's work, in the of Raipur and Bhandára Districts, and it also broke ground in the Dhanwai range of Mandla, which forms portion of the Jubbulpore forest division. As will be seen from the statement above, the total area surveyed was 626 square miles, as compared with 591 square miles in the preceding year, the average cost-rate, including the preparation of records of soils and forest-growth, being R46·9 as against R47·9 in 1890-91. The total charges incurred amounted to R30,194. In Betul, Hoshangabad and Nimar, operations were prosecuted by No. 14 Survey of India Party, work in the latter district being confined to triangulation and traversing in advance. In all 684 square miles of country were triangulated; on 483 square miles the detailed survey of the forests were completed, together with the classification of forest growth and soils; and 574 linear miles were traversed.

Burma.—In Lower Burma, No. 20 Party of the Survey of India was occupied, as previously, on the survey of the reserves in the Toungoo District on the 4-inch scale, of which 226 square miles were completed. It is understood that the 68 square miles of "enclosed unreserved tracts" of which the survey on the 2-inch scale was, as reported by the Surveyor General, completed during the year, does not refer to forests. In the Salween forest division the survey by the Forest Survey Branch of the forests on the Siam frontier, to the west of the Thoungyin river, progressed in continuation of the preliminary work alluded to in the last Review. The area topographically surveyed was 128 square miles; triangulation was extended over 643 square miles of most difficult country, and 168 square miles were traversed in advance. The cost of the field and office work was R14,310, and the total expenditure of the Branch on this account R33,038.

In Upper Burma a considerable amount of survey work by departmental agency was carried out, and maps printed. The total length traversed with chain and plane-table was 1,940 miles. The total charge on surveys was R4,906.

Assam.—The topographical survey of the Goalpara forests on the 4-inch scale was continued by the Imperial Forest Survey Branch. The year's outturn amounted to 307 square miles, and the nature of the forest soil and tree-growth was recorded. Triangulation was extended over 544 square miles, and 19 linear miles were traversed. The total cost was R19,240, as against R21,186 in the previous year.

Coorg.—The survey of the ghât and other forests referred to in the Review for 1890-91 was continued, and the work was completed in October just after the close of the survey year. The forest survey was undertaken in connection with the revenue-settlement survey, but separate information under "forests" is not forthcoming. The Deputy Conservator dealt with progress during the financial year, and the Deputy Superintendent of Surveys submitted a report for the survey year 1890-91. The latter officer has since compiled a general completion report, in which, however, as stated above, complete information regarding the survey of the forests has not been separately given.

Ajmere.—Work under this head was confined to a few unimportant local surveys undertaken by the Forest Department.

Baluchistan.—A few minor surveys were carried out under various agencies; while, in the *Andamans*, there is nothing to record under this head.

Berar.—No original surveys were made. A sum of R547 was expended by the Forest Survey Branch on map-drawing and miscellaneous work.

Madras.—The Survey of India Department were engaged on topographical work in the Coimbatore, Madura and Tinnevelly Districts. Notwithstanding the difficult nature of the country surveyed, and the consequent sickness and desertions which took place among the members of the staff, the year's work was very satisfactory. The area topographically surveyed was larger and the cost-rate per square mile considerably less than in any previous year. Triangulation was extended over 1,196 square miles, and 253 linear miles were traversed. The cost, as estimated by the Board of Revenue, was approximately R64,000. Departmental surveys, undertaken generally in connection with settlement operations, cost R15,369 for the financial year, as against the previous figure of R15,031. In connection with the departmental surveys preliminary to settlement, the Board reported that in three districts very little and very inaccurate work was done.

Bombay.—The progress made by the Imperial Survey Department in the survey of forest estates in this Presidency was not quite so satisfactory as in the previous year. The area surveyed fell from 539 square miles to 437 square miles, and the cost-rate per square mile was considerably increased.

V.—Working-Plans.

7. The following paragraphs, treating of the progress made in the introduction of regular working-plans in the several provinces, exhibit still a very backward state in many circles as regards this most important of all questions connected with the conservative treatment of our Indian forest estates. I have on several occasions pointed out the reasons for this want of progress; and it is satisfactory to me that some Administrations have taken notice of my arguments in favour of simple plans, which provide merely for a location of fellings with a view of gradually improving the character and condition of the forests. It is in my opinion of infinitely greater importance that extensive areas should be brought under some systematic treatment, with the object of securing their general improvement, than that we should try to force selected working-circles into the straight jacket of elaborate working-plans. In certain cases, where the crops are specially valuable and where difficult sylvicultural problems are to be solved in order to meet a specially large demand on the resources of a forest area, such elaborate plans are excusable and even advisable; but, in most cases, we ought to leave elaboration to future generations of forest officers and aim at bringing the bulk of the forests under a simple systematic and conservative management. Under any circumstances time and money should not be wasted, as has been the case in several instances, in preparing elaborate plans for forests for the produce of which no present demand exists, or the possibility of which is far beyond such demand. I have already pointed out, under the head of "Surveys", that the absence of reliable maps has greatly delayed the introduction of systematic working, and that every effort is being made to supply this deficiency. The progress in the introduction of working-plans depends, more than in any other branch of forest administration, on the personal

technical qualifications and exertions of the local administrative head, and on the influence he brings to bear in this respect on his divisional officers. I may note from personal knowledge that great strides have been made since the end of the year under review, more especially in Bengal and Oudh.

Bengal.—The paucity of officers, both as regards number and qualifications, again delayed the preparation of regular working-plans. The progress, however, made during the year was, under the circumstances, not unsatisfactory. The working-plan for the important Darjeeling tract was completed, while another for the Sundarbans was in course of preparation; and much advantage may be expected from the working of forests in both these localities being conducted on an organized system. It was not found possible to proceed with the plans for the Singhbhoom and Kurseong forests referred to in the Review for 1890-91, but preliminary proposals for the management of other large forest areas in the Sonthal Parganas and Chota-Nagpur were drawn up by the Conservator, whose extensive tours and inspections will doubtless soon lead to the elaboration of plans for the more important districts. The Conservator reported that, while he was glad to have had the opportunity of abolishing the Working-Plans Division, he recognized that work of this kind could not be undertaken by the divisional officers in addition to their ordinary duties.

North-Western Provinces and Oudh.—Only the plan for the Palain-Kotri forests was sanctioned during the year, but a considerable amount of work in this direction was nevertheless carried out, and in all the circles the necessity of more organized working is admitted. In the Central Circle, the Conservator (the late Mr. D'Arcy) paid special attention to this subject. In the Ganges Division, a plan of operations for the bamboo forests was prepared and brought into force, and a regular plan was drawn up for the newly-acquired Lansdowne reserve. With reference to the remarks contained in the Review for the past year, it was reported that the Ranikhet, Naini Tal and Ganges plans needed revision. In the case of Oudh, the Conservator stated that "there are no working-plans in this circle, but there is every reason why there should be, and no reason why divisional officers should not compile them." The Kheri and Gorakhpur plans still remained under revision, and the preparation of various other plans was in contemplation and has since been begun. In the School Circle, no new plans were under preparation or sanctioned. It was reported that a plan for the Saharanpur forests was greatly needed. The Local Government in its orders on the circle reports again drew special attention to the manner in which deviations from prescribed plans, which had been brought to notice by the Inspector General of Forests, had taken place, and said that the omission of Conservators to detect these irregularities on the part of the divisional officers was unsatisfactory.

Punjab.—This branch of forest administration continued in a backward and unpromising condition during the year. The special working-plans agency was engaged, as in the preceding year, in the Bashahr forests, a preliminary report on which was furnished. The plan for the leased forests of Pangi, drawn up in 1888, was approved of by the Inspector General of Forests but still (1893) remains unsanctioned. Similarly, the working-schemes for the forests of Kalesar, Kotguru-Kotkhai and Simla, all of which have been under consideration for years past, remained unapplied at the close of 1891-92. In reviewing progress, the Government of India asked that the administration report for 1892-93 might treat specially of this subject, and remarked that the areas controlled under the provisions of working-plans amount to only 5·4 per cent. of the whole; and that, from the progress hitherto obtained, it will be years, in the absence of special efforts, before all the valuable forests are managed under pre-considered schemes. It is significant that in the few hill tracts where systematic enquiries have been made, it has been found that the forests have been over-exploited; and there can be no certainty that the other valuable areas are now being worked within their capabilities. It is now more than forty years since the increased demand for timber arose as a result of the British occupation of the province; and taking into account the long period which has elapsed since conservancy measures were first introduced by the Department, the relative accessibility of the forests, and the ease with which forest-working might be organised in all the more valuable tracts, it cannot be denied that not only is this branch of the administration unsatisfactory, but that its condition is more backward than is the case in most of the other provinces subordinate directly to the Supreme Government.

Central Provinces.—Here, as in the Punjab, the progress hitherto made has been very disappointing, and indeed these provinces still remain without a single regularly sanctioned working-plan. In the Northern Circle no plans were drawn up. The administration report for the Southern Circle for 1890-91 alluded to certain plans as being under compilation,

but they could not be at once applied and were consequently treated as preliminary reports, of which three were forwarded to the Inspector General. In Nagpur some attention was given to this subject, and in Chanda also the collection of working-plan *data* was reported to have been carried on without, however, resulting in material progress. In Seoni, Raipur and Bilaspur, three plans were to be re-cast or compiled in accordance with the advice of the Inspector General. No special agency existed during the year for the preparation of plans, and the Chief Commissioner in reviewing the reports stated that, with such an inadequate staff of officers, it was impossible that good progress under this head should be made. The detriment to the forest exploitation from the want of *data* on which to base the working was remarked upon After the close of the year, and partly in connection with this subject, an important decision was come to by the Local Government under which, while the ulterior preparation of plans will be to some extent anticipated by the early sub-division, on a great scale, of the forests into working-circles, blocks and compartments, in the latter of which fellings will be localized, the collection of *data* with a view to the preparation of regular working-plans will proceed concurrently. This very important departure will be noticed in detail in the Review for 1892-93.

Burma.—Considerable attention was paid to this subject in the Pegu and Upper Burma Circles, while but little progress in this direction is observable in the Tenasserim Circle. In the Pegu forests, the plan for the Taungnyo tracts, referred to in the last Review, was sanctioned. A plan for the Shwelé forests in Prome was also drawn up, and one for the Kabaung reserve in the Toungoo District commenced. In both circles the provisions of the annual plans-of-operation were observed.

In Upper Burma work was somewhat delayed in consequence of the employment of officers in other ways, but yet the record was not unsatisfactory, and the importance of pushing on schemes for the organized exploitation of the forests is fully recognized. Linear traverses with chain and plane-table were made, principally in the Shan States and the Chindwin and Mandalay Divisions, over 1,940 miles, as against 2,554 miles in the preceding year. Valuation surveys extended over 9,365 acres, and rough plans were prepared for the Yaw, Kyaw and Taundwingyi forests. Annual plans-of-operation were prepared for and observed in all divisions.

Assam.—Work was restricted, as in the previous years, to the Goalpara sál forests. The collection of material for the preparation of this plan was commenced in 1888-89 and has since proceeded almost uninterruptedly, at an expenditure, exclusive of the cost of the forest survey but including the pay of officers employed thereon, probably already in excess of R50,000. A preliminary report on the lines which it is proposed that the working-plan shall take was submitted in April 1893. The Government of India, when reviewing the Conservator's report for the year, drew attention to the large expenditure incurred on this plan, and to the fact that the high cost of the plans prepared in previous years had been decidedly out of proportion to the results achieved. There are good grounds for this assertion, since the few working-plans already sanctioned in the province have been costly failures. Money and time have been wasted on unnecessary elaboration, particularly on the detailed enumeration surveys which have been made with the view of securing that the forests should not be overworked. But the conditions regulating the local supply and demand for timber should have made it clear that overworking was not likely under any circumstances to take place in the localities considered, and in fact some of the forests for which costly plans have been drawn up have proved unworkable, for the present at least. As the exploitation of the Assam sál forests can, broadly speaking, be best regulated by area and cultural rules, estimates of the growing-stock need, if required at all, be of a rough-and-ready kind designed to gauge the quantity of material available for consumption. The charges on account of valuation surveys per square mile operated on have been quite out of proportion to their present value.

Coorg.—The importance of this subject, in its relation to the Coorg forests, was not lost sight of, though but little progress was effected. The working-plan for the North Dubare forests was, after revision, sanctioned, and the collection of *data* was in progress in the adjoining tracts of Anekadu and Attur. It was anticipated that, with the advent of additional trained establishment, more would be done during 1892-93.

Ajmere.—The plan for the future working of these forests was not, as anticipated in the Review for 1890-91, drawn up. After the close of the year, however, a preliminary report was forwarded to the Inspector General by the Extra-Assistant Conservator, and subsequently an Assistant Conservator was deputed from the Berar Circle to assist in framing a general working scheme.

Baluchistan.—Nothing is contained in the report for the year under this head, and it does not appear to what extent regularly organized systems of working are necessary or desirable. No working-plans exist for these forests.

Andamans.—In pursuance of the suggestions referred to in the last Review, and in connection with the clearing of boundary lines mentioned above, a valuation of the stock of padouk by linear survey was carried out over an area of about one square mile. The wreckage caused by the cyclone, which devastated the forests, prevented the undertaking of operations on a larger scale. The results cannot be taken, without more extended inquiries, as an accurate gauge of the average condition of padouk in the forests The disproportion in the age-classes which has been found in the area surveyed was anticipated, and will probably be found to be of general occurrence throughout the forests. A full and careful investigation regarding the number and ages of the trees must be made with the object of securing a sustained yield. As the revenue from these forests is directly proportionate to the quantity of padouk cut from them and exported, the determination of what really is the capacity of the islands in the production of this species is perhaps the most important *desideratum* in the local forest administration.

Berar.—The progress anticipated in the Review for 1890-91 was not so considerable as was hoped for, and this circle remains without a single sanctioned working-plan. The plan for the Melghát forests was advanced a stage. This plan has since been submitted to the Inspector General, but was necessarily returned for revision. The plans for the Penganga and other reserves were also under preparation or in abeyance. The outlines of various minor plans were forwarded to and approved by the Inspector General.

Madras.—Of the various plans, the results of which are commented on by the Board of Revenue in its administration report, in only two or three have the provisions of the schemes been observed. The other plans either could not be worked up to, or were found unsuitable, or entirely abandoned. The Board of Revenue expressed the opinion, which was endorsed by the Local Government, that the preparation of working-plans must be more or less a "counsel of perfection" until the more pressing needs of the administration in settlement, demarcation and fire-conservancy are fully met. Apart from the fact that perfection need not, and indeed perhaps should not, be the immediate object in the preparation of the very simple working-plans which will adequately meet the present requirements of the majority of the forests in Madras as in other parts of India, the applicability of the Board's argument in the case of the vast forests already settled, demarcated and fire-protected is not at all apparent. It is no doubt true that the legal constitution of the State forest property is the most important duty of the forest administration, but that of itself is not sufficient reason or justification in deferring indefinitely in the settled areas what is the second step in any sound system of forest organization.

Bombay.—The progress made in the preparation of working-plans has been comparatively satisfactory. The working-plans for the Thana District are really nothing beyond a location of fellings, by means of large scale maps from which the coupes are transferred to the ground. The large number of coupes scattered over the country ensure to a great extent an equality of outturn, and the method is doubtless a great improvement on the previous nearly uncontrolled exploitation. The results have been so far satisfactory, and the system is so easy of application that its introduction in forests of the same character throughout, which demand no difference in their treatment, may be recommended.

VI.—Communications and Buildings.

8. In the North-Western Provinces, and in the Northern Circle of the Bombay Presidency, considerable advance has been made in the construction of roads; but elsewhere progress has not been entirely satisfactory. The North-Western Provinces have from the very beginning taken the lead in the construction and improvement of export forest-roads, and already for some years past they have been reaping the benefit of their foresight in this respect.

Attention cannot be too frequently drawn to the fact that the cost of transport of bulky forest-produce represents almost invariably to the consumer the greater portion of its price.

The improvement of roads and other means of communication should consequently be insisted upon, not merely in the interests of the State as the proprietor, but in that of the consumers as well.

Bengal.—Under communications, R6,910 were spent, as compared with R6,068 in 1890-91. The preparation of a general scheme for the opening out of forest-roads, referred

to in the last Review, was postponed owing to want of officers. The Local Government, in reviewing the work done, remarked that this branch of the administration was in a backward condition, and expressed a hope that greater progress would be made in future. The charges on buildings amounted to R12,158, as against R15,474 in the previous year. A new steamer, the *Swan*, for controlling the exploitation of the Sundarbans forests, was delivered to the Department. The cost of this vessel was R35,258.

North-Western Provinces and Oudh.—As in previous years, considerable attention was devoted to these works, and the expenditure incurred, relatively to that spent under the same head in other provinces, was large. The total expenditure was R1,03,028, or 5·95 per cent. of the gross revenue, the corresponding percentage for the whole of India being 2·03.

The incidence of the expenditure in the various circles was as follows:—

Circles.	Roads and bridges.	Buildings.	Other works.	Total	Percentage on gross expenditure of the year.
	R	R	R	R	
Central	37,274	15,819	1,647	54,740	19 80
Oudh	13,630	13,103	1,223	27,956	6·96
School	10,060	9,191	1,081	20,332	7·32
Total, 1891-92	60,964	38,113	3,951	1,03,028	10 75
Total, 1890-91	47,596	36,845	3,382	87,823	9 56

The charges were heaviest in the Central Circle, where 20 miles of new cart-road were made at a cost of R9,709, and 54 miles of paths at a cost of R1,967. The cost of the Airadeo cart-road, which was heavy, amounted to R1,535 per mile. Rupees 4,651 were also spent on the repairs of the Kalaghar-Boxar cart-road. The chief item of expenditure under communications in the Oudh Circle was R7,062 expended on bridges in the Kheri District. The most important work in the School Circle was the widening and repair of 29 miles of the Chakrata-Tons road at a cost of R2,002.

A return, furnished by the Conservators, showed that there were in the three circles 136 rest-houses for the controlling staff, 174 quarters for subordinates and 205 miscellaneous buildings.

Punjab.—As in previous years, the expenditure was small, the total cost of communications and buildings being, respectively, R8,791 and R8,232 for 1891-92 and R7,919, and R6,312 for 1890-91. Most of the charges under communications was incurred in the Bashahr and Chamba Divisions, where R7,286 was spent, leaving R1,505 distributed over the eleven remaining divisions. The Conservator did not report on the adequacy of the present lines of communication or of forest buildings, but his report shows that in several divisions the cost of work under the head is merely nominal and cannot have resulted in any material improvement.

Central Provinces.—The total expenditure on works of this kind amounted to R15,616, or R4,434 in excess of the charges in 1890-91. Only R5,709, or 0·4 per cent on the gross revenue realized, were expended on lines of export or communication. But little progress in this direction has been effected in either circle. It is hoped, however, that an improvement in this respect will soon be brought about, and after the close of the year under review, the Chief Commissioner directed that "efforts must now be made to bring the various blocks and compartments, which are to be selected in pursuance of the scheme of localized fellings, within easy reach of the people, by developing and improving the modes of ingress to and egress from the forests" To adequately carry out this policy, it seems clear that a considerably increased annual expenditure must be made under this head.

Burma.—It is disappointing to have to record, with reference to what is stated on this subject in the Review for 1890-91, that in Lower Burma the total expenditure in both circles on these very important works amounted only to R7,394, as compared with R17,295 in the preceding year. The expenditure on communications was raised indeed, but only from R205 to R554. In this connection it may be recorded that the gross revenue realised during the year amounted to more than 28½ lakhs. In Upper Burma only R20 has been recorded as spent on

roads and bridges during the year. R10,732 was spent on new buildings, principally for the controlling officers, and R1,245 on repairs.

Assam.—The expenditure on roads, R4,823, was slightly increased as compared with the corresponding figure in the previous year, and was incurred for the greater part in the Garo Hills, Darrang and Kamrup Divisions. Annual repairs to existing buildings were carried out at a cost of R8,917, as against R8,052 in 1890-91.

Coorg.—No new roads were made, but the importance of opening out the forests in this manner is recognised, and the preparation of a systematic scheme for the improvement of communications was under consideration. Only R596 were expended on repairs. The question of the erection of suitable houses for the forest establishment also received attention, R2,873 being expended.

Ajmere.—Work under this head was unimportant: R505 in all were expended.

Baluchistan.—Operations which were of a petty nature, and need not be referred to in detail, cost R973. The Deputy Conservator's report does not comment on the sufficiency or otherwise of the existing buildings and roads.

Andamans.—The extension of the portable tramway for the extraction of timber, alluded to in the last Review, was made at a cost of R8,266. A full and interesting report on the saving in the cost of timber extracted, derived from the use of this line, was furnished by the Deputy Conservator. The estimated net profit for the year was R6,149, or 27·5 per cent. on the capital outlay incurred, after making a deduction of 10 per cent. for depreciation of material. The total length of the line is now 2½ miles, and the profits would have been considerably greater had it been possible to utilise the tramway to its fullest capacity. Rupees 1,483 were expended on buildings, principally for barrack accommodation of convicts employed on forest work. The total expenditure during the year under both heads was R12,938.

Berar.—It is satisfactory to again record that activity continued to be displayed in opening out communications in this circle, and that it was contemplated to make a further extension of roads. The expansion which has taken place in the outturn of timber and the steady increase of forest revenue must, no doubt, be in great part ascribed to perseverance in this wise policy. The expenditure incurred by the Department during the year amounted to R9,358 on new work and R4,757 on maintenance. Rupees 40,969 were spent by the Public Works Department on the Gugumal forest road, which has now been completed at a total cost of R4,60,000, no doubt the largest sum which has yet been spent on a single forest line of export in India. On buildings R4,450 were expended.

Madras.—The total expenditure on roads and buildings amounted to R72,497, as compared with R68,940 in the previous year, the percentage of cost to the gross revenue realised having risen from 3·8 to 4·2. The expenditure on lines of communication, which as a rule is of a directly reproductive kind, was less than the cost of buildings; but the Board of Revenue had under consideration the question of increasing expenditure on roads and limiting that on buildings. The desirability of forecasting the requirements in roads of the local forest administration, referred to in the last Review, does not appear to have been considered during the year.

Bombay.—Considerable progress was made in the construction of roads in the Northern Circle. A total of R3,517 appears in the forest accounts of the presidency under this head, and of this sum the Northern Circle is debited with R719. But progress must not be gauged by these figures. It will be seen from the administration report that over R57,000 were expended by the Public Works Department and by District Boards on lines of communication, which were originated by the Forest Department, and the opening out of which will directly and materially increase the forest revenues.

CHAPTER II.

PROTECTION AND IMPROVEMENT.

I.—General Protection.

9. The following table shows for each province the number of breaches of the forest law brought to notice during the year:—

Province.	Number of cases taken into Court.		Number of cases compounded.		Total.		Proportion of convictions to the total number of cases decided by the Courts.	
	1891-92.	1890-91.	1891-92.	1890-91.	1891-92.	1890-91.	1891-92.	1890-91.
							Per cent.	Per cent.
Bengal	79	203	1,865	1 959	1,944	2,162	78	87
North-Western Provinces and Oudh	126	169	743	759	869	928	74	89
Punjab	1,315	1,211	648	909	1,963	2,120	78	78
Central Provinces	198	210	7,849	7,870	8,047	8,080	72	73
Burma (Lower)	308	250	1,012	700	1,320	950	91	89
Burma (Upper)	109	83	253	115	362	198	73	71
Assam	171	115	260	219	431	334	79	73
Coorg	18	6	12	7	30	13	72	68
Ajmere	86	62	53	177	139	239	97	98
Baluchistan	141	75	19	9	160	84	94	99
Andamans	...	...	...	...	...	...	...	...
Total	2,551	2,384	12,714	12,724	15,265	15,108	82	83
Berar	373	416	...	...	373	416	83	85
Total Bengal Presidency	2,924	2,800	12,714	12,724	15,638	15,524	82	83
Madras	8,124	5,036	3,512	2,051	11,636	7,087	75	79
Bombay	1,696	1,638	16,091	10,951	17,787	12,589	78	77
GRAND TOTAL	12,744	9,474	32,317	25,726	45,061	35,200	79	80

The number of offences brought to light is, if we consider the habitual disregard of forest laws which is ingrained in the Indian population by centuries of laxness in this respect, comparatively small, even in those provinces from which the greater number of cases is reported. The majority of forest offences are of a trivial character when considered individually, but they become dangerous and sometimes destructive by their frequency.

It is for this reason that the administration dare not overlook the smallest offence, if its character be such that its multiplication would endanger the

well-being of the forests. I class amongst such offences illicit grazing, the destruction of young growth of any kind, the removal of humus or the cover of the soil, whether dead or alive, and the like. Leniency may generally be shown as regards petty thefts of dry wood, fruit, or other products, the removal of which in any quantity does not materially effect the physical constitution and prospects of the forests. In times of great scarcity it would seem better to abandon the general rules to some extent, rather than to relax vigilance or severity in the cases detected.

Bengal.—There was a great decrease in the number of forest offences prosecuted before the Courts, the total being 79 as against 203 in the previous year. The diminution was attributed by the Local Government to a change of policy in the Sunderbans Division, whereby more reliance was placed in the checking of offences by effective departmental supervision than on the punitive provisions of the law. At the same time the percentage of convictions obtained was reduced by 9 and 2, respectively, on the figures for 1890-91 and 1889-90, and this fact is not commented upon in the Conservator's Report. Of 1,865 new cases compounded under section 67 of the Forest Act, 1,198 occurred in the Sunderbans and 392 in Darjeeling.

North-Western Provinces and Oudh.—The result of the police protection of the forests during the year cannot be considered as satisfactory. The number of new Court cases was 126 or 43 less than in 1890-91, while the percentage of convictions obtained decreased from 89 to 74. In the Central Circle the results were especially bad, since, out of 183 people proceeded against, only 46 were convicted. In the Oudh Circle there was also a falling off of 14 per cent. in the percentage of convictions, and in the School Circle alone was the percentage increased. The total number of cases in which composition was accepted was 743, or 16 less than in 1890-91.

Punjab.—Under this head there is but little in the Conservator's Report calling for comment. The number of forest cases prosecuted in Court was 1,315, or 9 per cent. in excess of the previous year. The percentage of convictions, *viz.*, 78, remained unchanged. The number of compositions under the Forest Act was 648, and 36,198 animals were impounded.

Central Provinces.—From the above statement it will be seen that the results obtained did not differ very materially from those of the preceding year. The returns from the Hoshangabad and Sambalpur Divisions were, however, stated to be vitiated by the inclusion of malguzári forest cases, which do not concern the working of the Department. The Chief Commissioner, in passing orders on the reports, adverted to the large number of cases reported in the Chanda and Saugor Divisions, and pressed on the Deputy Commissioners the necessity of checking promptly any tendency towards undue severity in forest prosecutions, and particularly as regards the application of section 67 of the Forest Act.

Burma.—In Lower Burma 308 cases, of which 143 occurred in the Tenasserim Circle, were taken before the Courts, with the result that the percentage of convictions obtained was raised to 91, the previous figure being 89. The number of cases compounded under the Forest Act was 1,012, or 44 per cent. greater than the number settled in this manner in 1890-91. The large increase in the Tenasserim Circle under both heads took place in the Salween-Attaran Division, but the fact was not commented upon by the Conservator. In the Pegu Circle, also, the number of prosecutions and convictions was materially increased. In respect of this circle the Chief Commissioner agreed with the Conservator in considering small fines of R20 to R25 as an inadequate punishment for raising fire in reserved forests, and it is satisfactory that this important matter has attracted attention.

In Upper Burma, also, the number of cases, both prosecuted in Court and compounded, was, according to the above statement, much increased. The increase was occasioned mainly by cases arising from the protection of catch, but is more nominal than real, as a number of cases of this kind were excluded from the returns for 1890-91.

Assam.—This branch of the forest administration presented some features which do not appear to be very satisfactory. The number of offences prosecuted in Court or compounded did not very much differ from the figures for 1889-90, and there is some reason to think that, as suggested in the last Review, there had been a diminution of efficiency in detecting and punishing offences. During 1891-92 there were 171 new cases, or 48 per cent. in excess of the previous year. The percentage of convictions, *viz.* 79, was better, but is still 3 per cent. less than the percentage of 1889-90. The number of cases compounded also increased from

219 to 260. It must be regretted that compositions were again accepted on account of very serious injury caused to the forests by fire. In reviewing the Conservator's Report, the Government of India made the very evident, but in this case no doubt necessary, remark that the careless causing of forest fires is a too serious offence to be ordinarily met by compounding, a provision of the law which was designed to meet cases of a trivial nature.

Coorg.—The increase in the number of cases prosecuted or compounded was due to greater activity on the part of the officials. Cattle found grazing in the forest without permission were impounded to the number of 2,843, as against 2,327 in 1890-91. The Deputy Conservator reported that illicit grazing and the intentional firing of the forest had not been in the past treated as forest offences, but that proper action would be taken in future.

Ajmere.—The number of offences prosecuted before the Court rose from 62 to 86, but the forest report does not explain the reason why. Cases compounded declined from 177 to 53, as leniency was shown to the people in consequence of the scarcity which prevailed. The number of animals impounded was 5,442, as against 4,097 in 1890-91, the increase being mainly on account of goats and sheep.

Baluchistan.—The Deputy Conservator's Report makes no mention of the general effect of the recently introduced forest laws on the people, and information on this point would have been specially interesting in this case. One hundred and sixty breaches of the forest rules took place during the year, of which 141, or nearly double the number of 1890-91, were prosecuted in Court. Convictions were obtained in 94 per cent. of the cases. Of trespassing cattle, 1,297 were impounded.

Andamans.—The breaches of the forest rules are enquired into by the officers of the Settlement, and the few cases of careless firing of the forests which took place were adequately punished in this way.

Berar.—It cannot be said that the results of the protection of the forests under this head were specially successful. The total number of Court cases fell from 416 to 373, while the percentage of convictions was also reduced by 2 per cent. This percentage, however, was in excess of the average in the Bengal Presidency; but, it may safely be said, in continuation of the remarks recorded in last year's Review, that so long as particulars regarding undetected cases are not forthcoming, it will be difficult to gauge the value of the returns as indicating efficiency in this branch of the administration. The report, too, omitted to mention the nature of the "other offences." In reviewing the progress made, the Government of India pointed out that there have been difficulties in the way of punishing offenders, but that, upon the application of the new forest law and rules, better results may be anticipated.

Madras.—As the above table will show, there was an enormous increase both in the number of cases prosecuted in Court and of those compounded under the Forest Act. This is stated to have been due to the failure of the rains, which united the people to make an unauthorised use of the fodder-supplies of the forests. The Government, after the close of the year, commented strongly on the prosecutions undertaken in certain districts, and said that the returns showed that probably cases were trumped up by the forest subordinates, and that the superior officers did not exercise a sufficient supervision over the cases sent before the Magistrates. Strict orders have been issued to Collectors to remedy this state of things; and there can be little doubt that there are good grounds for considering the unequal administration of the forest law as very unsatisfactory. The percentage of cases resulting in conviction declined from 79 to 75. Not only was there a very large increase in the number of cases compounded, but the amount of compensation levied was almost doubled, as compared with the previous year.

Bombay.—The fact that the cases of breaches of forest rules in Bombay amount to a larger number than that for the whole of the Bengal Presidency must be explained. In the first instance the forest areas are more scattered and interspersed with cultivation than in almost any other part of India, and, secondly, the protective establishment is far better developed, and breaches of forest rules escape detection less frequently than in other provinces.

II.—Protection from Fire.

10. The areas successfully protected from fire during the year amounted to 24,046 square miles against 23,114 square miles in the year preceding. The table below shows only those areas for the protection of which special measures were adopted, and does not include the vast forests which are, as

a rule not subject to annual conflagration, owing to their position or to their character:—

Province.	Area in square miles. Attempted. 1891-92.	Attempted. 1890-91.	Protected. 1891-92.	Protected. 1890-91.	Proportion of failures to area attempted. 1891-92.	1890-91.	Cost. Per square mile protected. 1891-92.	1890-91.	Per acre protected. 1891-92	1890-91	Proportion of area under fire-protection to total area of Reserves, (*Leased* Forests included.) 1891-92.	1890-91.
					Per cent.	Per cent.	R	R	Pies.	Pies.	Per cent.	Per cent.
Bengal	1,975	1,464	1,574	1,389	20	5	8	11	2	3	38	28
North-Western Provinces and Oudh (a)	2,721	2,276	2,624	2,209	4	3	18	18	5	5	70(b)	62(c)
Punjab	297	355	260	352	12·4	0 8	8	4	2·5	1 3	4·7(d)	6(d)
Central Provinces	3,870	3,236	3,659	3,090	5	5	14	16	4	5	20	16
Burma (Lower)	501	447	496	368	1	18	63	64	19	19	10(e)	9(e)
Burma (Upper)	1,066	1,181	201	164	81	86	40	0 8	1 2	0·2	7(d)	7(d)
Assam	1,141	1,141	1,003	1,070	12	6	19	20	6	6	11(d)	11(d)
Coorg	204	204	179	160	12	22	30	28	9	9	24(d)	24(d)
Ajmère	139	140	139	140	...	...	0·5	0·5	0·16	0·16	100	100
Total	11,914	10,444	10,135	8,942	15	14	17	17	5	5	..(f)	...(f)
Berar	1,137	1,111	1,125	1,085	1	2	7	7	2	2	90	98
Total Bengal Presidency.	13,051	11,555	11 260	10,027	14	13	16	16	5	5	...(f)	...(f)
Madras	4,597	4,928	4,830	4,700	6	5	10½	9	3	3	28(d)	30(d)
Bombay	10,290	10,344	8,456	8,417	18	18	2	2	0·71	0·59	71(f)	71(f)
GRAND TOTAL	27,938	26,827	24,046	23,144	14	14	10	9	3	6	...(f)	...(f)

(a) Fire protection in the Central Circle extended over *Protected forests* as well as Reserves, and in that circle the area attempted to be protected included tracts for which no special fire-protective measures were taken.

(b) In the Oudh and School Circles 80 per cent. respectively, in the Central Circle (taking Reserved and Protected forests into account) 60 per cent.

(c) In Oudh 64 per cent., in School Circle 79 per cent., in Central Circle (taking Reserved and Protected forests into account) 52 per cent.

(d) Proportion of area under fire-protection to total area of all forests.

(e) Taungya areas not included.

(f) Fire-protection was extended to Protected forests as well as Reserves, and the area attempted to be protected included tracts for which no special fire-protective measures were taken.

The character of the forests and the consequent difficulties and facilities of protection vary to such an extent in the several provinces that a comparison between the results of different provinces is of no practical use. A comparison of the results in each province will in future be given in the quinquennial reports submitted by the Inspector General of Forests.

Bengal.—The fire-protection of the forests cannot be considered satisfactory, failures being in some measure due, as was mentioned in the last Review, to insufficient supervision on the part of the divisional officers. The proportion of the reserved area of which the protection was attempted was increased by 10 per cent., and that of failures to area attempted by 15 per cent. The cost per acre protected was reduced from pies 3 to pies 2. Serious fires again occurred in Jalpaiguri, but here, as well as in Singhbhum, conditions were unfavourable, and better results may be anticipated in future. The change of system advocated by the Conservator for the fire-protection of Jalpaiguri and other localities, by which the more inflammable savannahs interspersed amongst tree-bearing tracts would be burned early in the year, was long ago suggested by Sir D. Brandis, and the practice could no doubt be advantageously adopted in various parts of India.

North-Western Provinces and Oudh.—The protection during the year may, on the whole, be considered good, for, although the results were inferior to those of 1890-91, the area attempted to be protected was increased by 445 square miles, or 19 per cent., while climatic conditions were very unfavourable to success. The percentage of failures was 3·54, as against 2·94 in the preceding year, the diminution being due to extensive fires in the Pilibhít and Bhira Divisions. Some of the fires seem to have been due to preventible causes, as unreadiness or carelessness on the part of the forest staff, and this in a province so forward in its forest administration is disappointing. In passing orders on the reports, the Supreme Government said that

the policy in the School Circle of rewarding exceptionally good work in fire-conservancy has much to recommend it, but that adequate punishment should be given in cases of proved carelessness. It was reported that the experiment of burning the chir forests in the early part of the hot season, with a view to preventing more serious fires later on, has not yet been successful. The total expenditure incurred on fire-protection in the three circles was R44,830.

Punjab.—Disastrous fires occurred, principally in Hazara, but the area of forest burned in the Rawalpindi, Kulu, Bashahr and Ambala Divisions was also very large. The conflagration extended over 80 square miles, as compared with 15 square miles in the previous year, these figures including, however, non-protected as well as protected forests. The poor results may be attributed to the great drought of the hot season, but there continued to be special difficulties, as in the Hazara District, where fire-conservancy in bad seasons has usually been difficult in consequence of the prevalent practice of incendiarism. In all 294 fires took place, as against 67 in the previous year, when, however, the atmospheric conditions were favourable. The average areas burned at each fire in 1890-91 and 1891-92 were 142 acres and 173 acres respectively. The cost per square mile protected was increased from R4 to R8; but, as the expenditure in the province is no real gauge of the protection afforded, these statistics are not worth much. The total expenditure only amounted to the comparatively insignificant sum of R1,982.

Central Provinces.—As will be seen from the table, there was a considerable increase in the area "attempted" and in the proportion of forest protected, and the results must be accepted as very satisfactory and creditable to the forest staff. The percentage of reserves fire-protected rose from 16 to 20. The proportion of failures remained unchanged and fairly low. The cost per square mile protected was reduced by R2. The total cost was R53,461, of which R34,357 were spent in the Southern Circle, where, however, the efficiency was somewhat less. The incidence of cost per square mile protected was: Northern Circle, R10-12-4; Southern Circle, R18-3-5.

Lower Burma.—The results of fire-protection were eminently satisfactory, and the material increase in the area operated upon is evidence of the efforts made in this branch of the administration, which, in Burma, is attended by exceptional difficulties. At the same time the dry-season was, relatively speaking, unfavourable to fires. In Tenasserim, only 5 acres out of 141 square miles were burned, and in the Pegu Circle 99 per cent. of the area attempted was protected. These results speak for themselves. In the latter circle protection was facilitated by the action of the Deputy Commissioners in issuing warning notices, and by the clearance of wider fire-lines.

In Upper Burma the account of the work undertaken, as given in the report, is irreconcilable with the fire-return appended to it. From that return it would appear that the protection of 1,066 square miles was attempted at a cost of R805, and that only 201 square miles were actually protected, the percentage of failure being thus 81. The report shows, however, that protection was really confined to a few forests of the Katha and Pyinmana Divisions.

Assam.—The year's record was not so satisfactory as in the previous year. The area "attempted" remained unchanged, but the percentage of failure was doubled. This want of success was attributed to a great extent to want of proper supervision on the part of the superior forest staff, and it seems clear that the unfavourable season was not the only cause of failure. The want of intelligent supervision in fire-tracing, of which similar cases have occurred in past years, and to which must be ascribed 40 per cent. of the gross area burned, is not creditable. In the Goalpara District no less than 79,556 acres, or 19 per cent. of the area attempted, were burned.

Coorg.—Thirty-four fires took place, as against 63 in 1890-91, and the proportion of failures was reduced from 22 to 12 per cent. Although the working of the Department in this direction showed some improvements, as compared with the results obtained in previous years, yet matters were not on a very satisfactory footing. The Deputy Conservator reported that the methods of protection were extremely faulty, as compared with those in use in the Central Provinces. Incendiarism of the forests continued, and an especially regrettable feature of the administration was that, as in Assam, the departmental officials were directly responsible for a large portion of the forest fires which took place. In reviewing the report, the Government of India made certain suggestions with a view to the securing of more efficient fire-protection, and it may be expected that the results will be better in future. The total cost incurred on this work during the year was R5,179.

Ajmere.—No fires took place, a fact which no doubt can be attributed to the scarcity of fodder and to the opening of the reserves to grazing.

Baluchistan.—It was reported that no fires took place, nor were fire conservancy measures in force.

Andamans.—The Deputy Conservator reported that fires had began to invade the forest from adjoining cultivation, and that this was a source of danger, the importance of which should not be overlooked. The practice is, however, being checked, and, under the circumstances, can probably be entirely stopped without much difficulty.

Berar.—With the single exception of the Wun District, the protection of the forests from fire continued to be effective, and the results during the year were creditable to the forest staff. The area over which protection was attempted was increased by 26 square miles, and that actually protected by 40 square miles, as compared with the figures of the previous year. The failures amounted to only 1 per cent., and the cost per square mile protected was reduced to R0-14-7.

Madras.—It will be noticed from the above table that the results of fire-protection were not so favourable as in the year 1890-91. The diminution of efficiency was, however, more apparent than real, because certain areas were included in the returns for 1890-91 as protected which had not really been so, and because, in that year, atmospheric conditions were more favourable to success. On the whole, the operations of the year under review may be held to have yielded satisfactory results. The following table, abstracted from the Madras Government's orders on the report, gives, for the five years ending 1891-92, particulars of the total cost of fire-protection :—

Year.	Area attempted to be protected (in square miles).	Cost in rupees per square mile.
1887-88	2,570	13·70
1888-89	3,169	10 81
1889-90	4,610	7·97
1890-91	4,928	8 41
1891-92	4,596	9·90

Bombay.—The results of fire-protection have been satisfactory. Great credit is due to Mr. Sinclair, the Collector of Thana, for the manner in which he has co-operated in this respect with the Forest Department, and it is satisfactory that the Bombay Government have taken steps to ensure similar co-operation in other districts.

III.—Grazing.

11 The progress made in gradually systematizing the grazing arrangements in the several provinces proceeds slowly, but some advance is made from year to year. I have pointed out, in my Review for 1890-91, the reasons why such progress, entailing as it does certain restrictions, can be only very gradual; and so long as the question is constantly kept in view, and no retrogression takes place, we have good reason to be satisfied.

Bengal.—The Administration Report for the year showed that, of the total reserved area of 5,211 square miles, 769 square miles were open to grazing for the whole or part of the year. Only 374 sheep and goats and 5,142 cattle were admitted, so that the average incidence amounted to only one animal per 605 acres. The number of animals admitted per 100 acres varied between 0·5 and 7·2. The Conservator remarked that the circle had not much to complain of on the score of grazing, and pertinently added that, since the existing reserves are shown to be valuable sources of supply in seasons of scarcity, it is a misfortune that so many of the Bengal districts should possess no forest of this class.

North-Western Provinces and Oudh.—The percentage of forest area closed to grazing in each circle during the year was 50 72, 41 and 29 23 for the Central, Oudh and School Circles respectively, the corresponding figures for the previous year being 52·14, 45·18 and 29 06. It will thus be seen that, with the exception of the School Circle, there was a material increase in the area open to grazing. The Conservator's remarks, as concerning this subject in the Oudh Circle, are of interest. He urged that the percentage of forest closed in each division is too small, and that the area of grass-lands outside tree-forest can adequately furnish grazing to

those who, by the position of their places of residence, are not practically forced to resort to the wooded areas. There appears to be much force in this and the other views expressed by the Conservator, and it is scarcely questionable that this branch of the administration in Oudh calls for improvement. The total receipts from direct or indirect sales of grass were R1,22,307, as against R1,04,595 in 1890-91, the increase being in the School Circle, where the revenue from this source was doubled. The grazing rules in the School Circle, referred to in the Review for 1890-91, had to be abandoned, and the preparation of fresh and simpler regulations was ordered.

Punjab.—The returns show that the percentage of area, wholly or partially closed, *viz.*, 29·3, remained unchanged. The area entirely closed was reduced by 37 square miles, but an additional 28 square miles were closed to browsers throughout the year. The percentage of forest area open to all kinds of grazing without restriction, *viz* 4,328 out of 6,070 square miles, remained unchanged. The Conservator claimed in his report that material progress had been made in the matter of closing; but, unless it be admitted that a large portion of the reserved and other forests may be grazed over without damage, it is not altogether apparent how, judging from the rate of progress in the past, this claim can be sustained. Of the reserved forests, only 47 per cent. are wholly closed, 24 per cent. in addition are partly closed, and 29 per cent. are liable to be grazed or browsed by camels, sheep and goats, although it has been authoritively decided that the presence of those animals is incompatible with good forestry. Again, taking the interesting statement furnished by the Conservator, it appears that camels, sheep and goats are only entirely prevented from browsing in 1,689 square miles (an area less than the extent of the reserved class alone), and that their presence is permitted during a part or the whole of each year in 4,381 square miles, or in *72 per cent.* of the gross area of forest controlled by the department. An especially interesting feature in the report is the evidence that the closure of forest, as an aid in the production of good fodder, is becoming appreciated by the zamindars and others in the Rawalpindi and Jhelum Districts.

Central Provinces.—In the Northern Circle, out of 10,100 miles of forest, 782 were wholly closed, and 8,577 or 84·92 per cent. wholly open to all animals. In addition, 741 square miles were wholly closed to camels, sheep and goats. The number of animals admitted was 1,362,499, or 72,711 in excess of the previous year. Of this excess, about one-sixth was on account of browsers. In the Southern Circle, the areas closed to ordinary grazing and to browsing animals were increased, as compared with the previous year, from 1,074 to 1,146, and from 1,002 to 1,822 square miles respectively. It will thus be seen that a very material increase took place in the area closed to goats and sheep. A total of 9,971 square miles, or 70 per cent. of the gross forest area, remained entirely open to grazing of all kinds. The number of animals admitted was increased by 46,589; browsers diminished by 8,644. The total grazing receipts rose (by R29,224) to R5,11,403 in the year under review. In connection with the remarks recorded in the last Review, several important regulations were introduced in order to mitigate the dissatisfaction felt at the grazing rules. Provision for the issue of nomad licenses was made; transit fees on cattle passing through the forest were abolished; and it has been laid down that cattle should not be impounded unless wilfully allowed to stray off the roads. These changes are no doubt of a wisely liberal nature.

Burma and Assam.—Nothing calling for comment appears in the circle reports on this question, which, as stated in previous Reviews, is of no material importance in these provinces.

Coorg.—No extension of the forest area previously closed to grazing was made during the year under report, as it was considered advisable to complete in the first place the survey, demarcation, and settlement. The number of animals admitted to graze rose from 13,285 to 15,802. With reference to the suggestion for the revision of the grazing rules, mentioned in the last Review, and to what has been already said as to the firing of these forests, the Government of India in passing orders on the report observed that, while the fire-protection continues to be unsatisfactory, the rule under which herds of cattle are excluded from the forests during the dry season should be enforced, besides which the ill-effect of grazing on the reproduction of tree-growth appears to be nearly as serious as that caused by fires. In the Deputy Conservator's report it is stated that in North Coorg natural reproduction is practically confined to the closed forest. The grazing question in Coorg is evidently one of special interest and importance.

Ajmere.—Owing to the drought, nearly the whole of the reserved area was again opened to grazing during the last quarter of the year; but it does not appear to what extent grazing was admitted during other months. The number of animals grazed was 48,000 (or 82 per cent. in excess of the number admitted in 1890-91), the acreage per head being 1·85. Cut fodder removed slightly increased, as compared with the previous year, but the quantity

was still far less than that extracted in 1889-90. It was stated that the people appreciated the benefit which they derived from the grazing policy pursued during the year.

Baluchistan.—Out of a total of 52,525 acres controlled by the Department, 4,763 acres were opened wholly or partially to grazing during the year; but the progress report omits to give either the kind or number of animals admitted. It was stated that the people will not cut fodder.

Berar.—The Conservator's remarks on this subject in the progress report for the year are interesting and open out important questions. As the season was exceptionally dry, certain State forests in Wun and elsewhere were temporarily opened to grazing on double fees, and this measure was much appreciated locally and saved many cattle. The total number of animals admitted in this way appears to have been 48,995, the fees realized amounting to R12,978. In the district reserved and unreserved forests 1,404,691 animals were admitted, the resulting revenue being R1,57,607. With reference to the Conservator's remarks already referred to, it may with reason be argued that the refusal to allow grazing to other than agricultural residents of the adjoining villages is warrantable, wherever there is actual or anticipated scarcity of fodder. Cattle for the requirements of the agriculturists should in fairness be allowed the first claim to such grazing as may be available, but the Forest Department is not bound to provide pasture for an unlimited number of animals, which may be of little service for agriculture, or may die in seasons of scarcity. In reviewing the report, the Supreme Government said that cattle belonging to professional graziers might, if admitted to graze at all, be properly charged a higher scale of fees than that enforced for agricultural cattle; and that this is, in the majority of cases when the grass demand exceeds the supply, good policy will not be questioned.

Madras.—Information was for the first time given as to the area open to grazing in each district, but the number of cattle admitted into reserves was not stated. Goats are generally excluded from reserved forest and reserved lands, but graze freely on unreserved lands, which aggregate 58 per cent. of the total forest and uncultivated land in Madras, amounting to 50,287 square miles. Of this immense area, 29,270 square miles are under no grazing restrictions whatsoever. The total grazing receipts rose from R1,50,015 in 1890-91 to R1,83,722 in the year under review, the increase being attributable to large admissions to reserved grazing grounds in consequence of the bad season.

Bombay.—The new grazing rules introduced in the Presidency have so far proved a success. Owing to the scarcity of fodder, considerable areas were thrown open to free grazing, but the revenue derived exceeded nevertheless that of the previous year, and amounted to R5,86,410.

IV.—Reproduction.

(*a*) *Natural.*

12. It is a matter of considerable difficulty to report year after year on the sylvicultural development of our forest areas, and the information given in the several reports is consequently in most cases very scanty and fragmentary. In my opinion it would be preferable if, in each annual report, a few specific cases were taken up, where certain measures adopted have either resulted in decided success or have failed. Special features, whether natural or due to the interference of man, which either prevent or facilitate natural reproduction, might also be discussed. I feel certain that such a procedure will increase our knowledge of the sylvicultural requirements of the Indian forests far more than is done by the fragmentary and sketchy notes at present found in most annual reports.

Bengal.—This subject was not mentioned, in the orders on the administration report, by the Local and Supreme Governments, and was very briefly touched upon by the Conservator with reference to the reproduction of the Sundarbans forests, and to the impediment in the way of regeneration in Darjeeling arising from the dense growths of bamboos.

North-Western Provinces and Oudh.—The administration reports contain interesting matter under this head, especially as regards the Oudh forests. The general excellence of reproduction in fire-protected localities was commented on, and this was markedly apparent to the Conservator who visited the Oudh forests after the lapse of 12 years. Allusion as regards these forests was also made to a matter already mentioned, *viz.* the further deterioration and

ultimate destruction of the areas in which grazing is allowed. It was in several cases proposed to define the blocks in which the villages are to exercise grazing rights, and the Local Government suggested that it might be possible and preferable to assign to each village or group of villages two grazing blocks which could be alternately closed and opened. Such a course, it was said, would be advisable, even if portions of forests now closed to grazing must be opened, so as to allow of reproduction in the forests classed as open. There seems to be much force in this view, if the incidence of the grazing is sufficiently light to allow of the existence of healthy young growth. The Local Government did not entirely support the view of the Conservator that, in Oudh, the effect of fire-protection, as favourizing inferior species at the expense of the sál, was unimportant, because this could be regulated by improvement fellings. His Honour the Lieutenant-Governor considered it "questionable whether the improvement fellings, as it is now proposed to carry them out, will be sufficiently frequent, and whether intermediate light thinning will not be required to prevent the suppression of the sál tree."

Punjab.—Reference is made, in the orders of the Local Government on the Conservator's report, to the difficult conditions under which vegetable growth took place in various localities owing to the locust-invasion. But to this cause may be added, as regards the forests, great drought and heat, with accompanying forest fires, as well as cattle and goat grazing. It was reported from Chamba that deodar reproduction is not so satisfactory as has been previously stated. From Kulu it was represented that cattle-grazing was excessive, and it may be accepted as certain that the number of browsing animals which it is proposed to admit as of right into certain tracts suitable for the growth of deodar is such as to preclude all hope of this species reproducing itself naturally hereafter on the areas in question. Throughout the hills the seed-year was a bad one and the rainfall scanty.

Central Provinces.—Notes on this question, as affecting the several divisions in the Northern Circle, are appended to the report for the year. They need not here be referred to; for they merely point, as stated by the Conservator and as admitted a thousand times before, to the fact that "the results of such observations are much in favour of closing the forest to grazing and their protection from fire." This is also the tenor of the general remarks made on this subject in the report for the Southern Circle, the Conservator pointing out that even a few years of closer protection produce a marked change for the better.

Burma.—The remarks recorded by the Conservators on this subject were very brief. From Tenasserim it was reported that the natural reproduction of teak in the fire-protected areas in the Salween-Attaran Division, and of the Khasia pine in the hills to the north of Papun was excellent. In the Upper Burma forests of Nanbyan and Nankyitha, where the bamboo (*Dendrocalamus Hamiltonii*) had flowered in the previous year, numerous teak seedlings were observed, the uprising of which may no doubt be attributed to the flowering and death of the bamboos. This concurrence of teak reproduction and bamboo flowering, which had already been accepted on inference, is a matter of special interest and importance in Burma, to which attention was drawn in the orders of the Government of India on the reports for the year.

Assam.—As the success of natural reproduction in this province may be gauged almost entirely by the degree in which fire-protection is effective, progress under this head cannot have been very satisfactory, as the area of forest burned was great. But in the forests safe-guarded from the effect of fire, reproduction was, as usual, good. The Conservator stated that, in the northern evergreen forests, a continued supply of the more valuable trees can be secured merely by fixing a minimum felling-girth, and an interesting feature is the encroachment of the sál on to the open grass plains adjoining forests of this species in the Garo Hills and in Goalpara. In the latter district, also, the sál is gradually displacing the dry deciduous forest.

Coorg.—The report of the Deputy Conservator gave a gloomy account of natural reproduction. Fires in South Coorg do a great amount of damage; but, even allowing for this, the failure under this head was conspicuous. In South Coorg regeneration by seed is practically confined to those forests which are closed to grazing, and teak reproduction is stated to be nowhere good. This is a subject which clearly demands special attention and study on the part of the forest staff.

Ajmere.—Natural reproduction appears to have been no better than in the preceding year. The rainfall amounted to only half the normal quantity, and the seedlings as they germinated died off from want of moisture.

Baluchistan.—The winter rains were very favourable, but their effect, as regards natural reproduction, was quite overpowered by the swarms of locusts which invaded the country, and

destroyed or damaged an immense number of trees and shrubs. In other respects, however, the results of the year were satisfactory; and it is clear that the recovery and growth of existing arborescent vegetation has been much bettered by closure and general protection.

Andamans.—The cyclone, already mentioned, which visited the islands in November 1891, occasioned immense damage by overturning or injuring trees. The Deputy Conservator, however, pointed out in his report that the gaps thus created in the crops may possibly assist the growth of hitherto suppressed seedlings of padouk. Experiments, with a view to determine the conditions under which this species reproduces itself naturally, were made by clearing the ground of brushwood and saplings within a radius of 50 feet round a number of old seed-bearers. The object is to secure an advance growth of mature trees, which, however, it was proposed to girdle the following year.

Berar.—The natural reproduction of the forests was reported to be, on the whole, satisfactory. But, as is the practice in various forest circles, the information afforded by the Conservator is somewhat disconnected. Probably much more interesting and useful results would ensue by selecting in each year in the several divisions one or more important species of trees for study and enquiry. The results of these enquiries might then be criticised, and an account given of the extent to which natural reproduction had taken place, or was found capable of encouragement, amongst the selected species. Investigations of this kind are of special importance. In the case of the Berar forests, which have undergone for centuries misuse of all kinds, and which it is desirable to bring as soon as possible into a normal condition, such a system of investigation could scarcely fail to give satisfactory results which could no doubt be applied in the forest administration of other circles.

Madras.—Natural reproduction seems to have been hindered in some localities by over-felling and over-grazing; but it is understood, from the various statements concerning this subject made in the reports, that the year was unfavourable on account of unusual drought, and especially so as regards reproduction from seed. It is clear that the main causes which retard reproduction in Madras are fires, grazing, interrupted leafy-canopy and the consequent dryness and deterioration of the soil, and the growth of rank herbage or of inferior trees.

Bombay.—The remarks regarding natural reproduction represent no special feature, but they add year by year to our knowledge of the sylvicultural requirements of our forest areas.

(*b*) *Sowing and Planting.*

13. The following table shows that steady progress is maintained in extending the cultural operations undertaken by the Forest Department.

PROVINCE.	AREA, IN ACRES.															
	At commencement of the year.				Added during the year.				Excluded during the year.				Balance at the close of the year.			
	Regular Plantations.	Cultural Operations.	Taungyas.	Total.	Regular Plantations.	Cultural Operations.	Taungyas.	Total.	Regular Plantations.	Cultural Operations	Taungyas	Total.	Regular Plantations.	Cultural Operations.	Taungyas.	Total.
Bengal	3,143	1,138	...	4,281	58	146	...	154	48	2	...	...	3,153	1,282	...	4,435
North-Western Provinces and Oudh	2,828	2,898	...	5,726	2	219	...	221	19	134	...	153	2,811	2,983	...	5,794
Punjab	14 213	6,792	...	21,005	340	(a) 389	...	729	312	(b)421	...	733	14,241	6.760	...	21,001
Burma (Lower)	3,915	3,406	22,235	29,556	32	101	(c)3,223	3,356	...	12	...	12	3,947	3,495	25,458	32,900
Burma (Upper)	5	4	...	9	5	15	...	20	4	...	...	4	6	19	...	25
Assam	2,138	168	...	2,306	...	...	..	...	...	...	...	...	2,138	168	...	2,306
Coorg	1,547	65	...	1,612	138	60	...	198	...	...	...	...	1,685	125	...	1,810
Ajmere	586	...	...	586	110	...	...	110	62	...	...	62	634	...	...	634
Baluchistan	1,127	172	...	1,299	606	3	...	609	...	164	...	164	1,733	11	...	1,744
Andamans	81	45	...	126	...	188	...	188	...	...	...	...	81	233	...	314
TOTAL	29,583	14,688	22,235	66,506	1,291	(a)1,121	(c)3,223	5,585	445	(b)733	...	1,128	30,429	15,076	25,458	70,963
Berar	1,409	3,666	...	5,075	..	311	...	311	754	400	...	1,154	655	3 577	...	4,232
Total Bengal Presidency	30,992	18,354	22,235	71.581	1,291	(a)1,432	(c)3,223	5,896	1,199	(b)1,133	...	2,282	31,084	18,653	25,458	75,195
Madras	(d)45,649	6,343	...	51,992	(e)3,652	288	...	3,940	17	(f)206	...	223	(g)49,284	(h)6,425	...	55,709
Bombay	8,815	317,037	...	325,852	2,337	34,566	...	36,903	252	6,017	...	6,269	10,900	345,586	...	356,486
GRAND TOTAL	(d)85,456	341,734	22,235	449,425	(e)7,280	(a)36,286	(c)3,223	46,739	1,468	(i)7,356	...	8,774	(g)91,268	(h)370,664	25,458	487,390

(a) 7 acres obtained by rectification of previous area figures.
(b) 202 acres due to rectification of previous area figures.
(c) 17 acres obtained by rectification of previous area figures.
(d) Includes 25,789 acres of topes.
(e) 2,573 acres of this obtained by rectification of previous area figures.
(f) Due to rectification of previous area figures.
(g) Includes 28,525 acres of topes.
(h) Besides 100 miles of channel banks.
(i) 408 acres due to rectification of previous area figures.

Bengal—Fifty-eight acres of new plantations were formed, and the area under cultural operations was extended by 144 acres. In connection with the Bamonpokri teak plantation, which is doing well, the Conservator doubted the expediency of attempting to introduce exotic trees in localities like the Terai, where the sal thrives naturally; and both as regards work of this kind, and in connection with cultural operations, Mr. Dansey's remarks are in accord with the frequently expressed views of the Government of India. Works of this kind have often been carried out on the same spot from year to year in different provinces and without any very appreciable results. It is clear that considering the present condition, financial and otherwise of the forests of India, artificial culture should only be undertaken after a careful study of local circumstances and prospects. The progress effected and the expenditure per acre of plantation should be watched and recorded, and the work should be discontinued whenever the conditions cease to afford a fair probability of ultimate success. Had this policy been pursued, much energy, time and money would have been saved. The present financial and administrative condition of the great mass of the forests of India does not permit of works of this description being undertaken on an extended scale.

North-Western Provinces and Oudh.—The total expenditure under this head was R6,346, as compared with R6,825 in the previous year, and these questions continued to meet with satisfactory attention at the hands of the forest staff. The operations of the year, however, do not appear to have presented any unusual features or to call for special comment.

Punjab.—The result of the year's work was to slightly increase and slightly diminish, respectively, the areas of plantations and areas subjected to "cultural operations." The gross expenditure incurred was R53,397. With reference to the remarks recorded in the Review for 1890-91, it may be mentioned that the Conservator reported that the plantation work at Dagshai had not been ill-considered financially, and the Government of India observed that, if this is so, the success attained is gratifying. The Conservator pointed out that the area of regular plantations as given in the return is misleading, as the constituted forests of Shahdera and Changa-Manga are included; and that, if these are excluded, the area would be reduced by one-half. Of a total expenditure of R49,487, shown in the returns as incurred on regular plantations, about R47,000 was really on account of expenditure on the Changa-Manga forest not connected with planting work. It is clear then that the return is totally misleading; but it is understood that more accurate figures will be forthcoming in future.

Central Provinces.—Operations under this head were trivial and were dismissed by both Conservators in a few words. The total cost in the Northern and Southern Circles was only R131 and R634 respectively.

Burma.—In Lower Burma the extent of taungya plantations was increased by 3,223 acres, of which, however, 53 acres were practically failures and should not appear in the above statement. In Tenasserim, where the total taungya area amounts to 8,274 acres, 1,479 acres were successfully planted during the year; but some of the work and expenditure incurred was fruitless. In Pegu, 1,674 acres of new taungya plantations were successful, the average cost being R10-0-9 per acre. Plantations of this kind in the Pegu Circle amounted at the close of the year to 14,978 acres of pure teak, 55 acres of pure cutch, and 2,151 acres of both species mixed. The question of the artificial reproduction of cutch in the Pegu Circle received special attention, and a planting scheme was sanctioned under which it is intended to plant up 700 acres yearly during 60 years at an annual cost of R22,000. The total expenditure was R10,700 in Tenasserim and R56,500 in Pegu.

In Upper Burma, the Conservator's report shows that R4,579 were expended under this head, principally in the Katha Division. This expenditure appears to have been incurred almost wholly on the introduction of exotic trees which will be referred to separately.

Assam.—The above statement, extracted from the Conservator's return, indicates that no work was done. This was not really the case, although the operations were unimportant, and there appears to have been a want of care in the control of expenditure. Form No. 52 appended to the report is unintelligible, because it shows that no alterations took place in the area of plantations, although nearly R5,460 were expended. The reason is that vacancies filled in or areas struck off as failures were not recorded. Upon the Charduar rubber-plantation R4,898 were expended, most of which was unproductive of result, the waste being reported as unavoidable. In reviewing the report, the Government of India pointed out that some of the waste was avoidable, and said that, apart from the cost of controlling and other establishment, R24,000 were expended on this plantation during the past three years ending 1891-92, and about R1,22,000 since the work was first commenced, and suggested that a history of the undertaking should be compiled. The total expenditure under this head was R5,988 as compared with R11,855 in the previous year.

Coorg.—Satisfactory attention was given to this subject, and the comparative failure must be attributed to unfavourable climatic conditions, *viz.* intense dryness of the spring months and the lateness of the rains. To the area under regular plantations and cultural operations were added 198 acres, the total cost under sub-head A. VIII. *d* being R6,126. The Deputy Conservator's report contains some particulars of interest. He reported that the planting of pure teak was of doubtful utility, owing to the attacks of catterpillars; and with a view to determine the reason for this, the planting of the species in lines in the forest was to be tried. The cost per acre of extending plantations of the different kinds was as follows:—sandal, R20-6-10; teak, R32-13-11; fuel, R21-4 2. Efforts were made, without much success, to induce the people to plant teak in the kumried areas, but it was reported that 15 acres in the Mawakal forest so planted with teak in 1891, resulted in failure, as the young plants could not survive the exposure and the heavy rains at the end of the dry weather.

Ajmere.—As in the preceding year, the sowing work was a failure. Seventy-six acres were operated upon, all of which should seemingly have been struck off, since the greatest measure of success attained was only 20 per cent. Planting did better, and under both heads a net addition of 48 acres was made at a cost of R1,720.

Baluchistan.—The total cost of work under this head was R1,937, as against R1,952 in 1890-91, and sufficient attention would seem to have been given to the maintenance and extension of plantations. The most important item of work was the successful boring of an artesian well 160 feet deep at Zangi Lora, for the watering of an irrigated plantation. The fostering of tree-growth and the distribution among the people of non-indigenous fruit tree was continued, and the work of the Department was pushed on with advantage in other ways.

Andamans.—As there was no room for additions to the Goplakabung plantation, padouk was planted over 188 acres at Chauldari in 20-feet broad lines cut through the forest, with intervening breadth of jungle of 80 feet across. The work succeeded, and was, unlike the older plantation of Goplakabung, but little damaged by the cyclone. R1,127 were spent on new work and R298 on maintenance.

Berar.—The Conservator's report under the head of artificial reproduction need not be alluded to in detail. The regular plantations were diminished by 754 acres, which were excluded from the Bairagarh reserve. Work in this class of plantations was suspended, but the reason for this is not apparent. Under cultural operations, various minor works were undertaken with little success. Here, as in other parts of India, notably in Bengal and the Central Provinces, what has hitherto been done in the direction of sowing and planting can have no very appreciable effect hereafter upon the future of the forests. Expenditure of this description, unless the results are exceptionally successful and can be obtained fairly cheaply, is little better than waste, and experience points to the fact that it should not be incurred without careful preliminary inquiry. It will generally be advisable to restrict operations to a few specially selected areas where the conditions afford a fair prospect of success, and at intervals to make a careful study, from the cultural and financial aspects, of the results achieved. The total expenditure incurred in Berar was R1,025 as against R705 in 1890-91.

Madras.—From the above table it will be seen that the area of regular plantations was increased during the year by 1,079 acres, the total area under plantations, or which has been operated upon culturally, being 55,709 acres, or 87 square miles, the corresponding figure for the whole of the Bengal Presidency being 117 square miles. The total cost under this head in the three circles was R50,756 or 2·99 per cent of the gross revenue of the year. This percentage is satisfactorily high, the figure for the whole of India amounting only to 2·12 per cent. The cost of extending the regular plantations was R41 per acre, the general past average up to the commencement of the year being R56 per acre. The following comparative statistics are extracted from the orders of the Local Government upon the administration report:—

	Area in acres.		Cost in rupees during the year	
	1890-91.	1891-92.	1890-91.	1891-92.
Northern Circle.				
Plantations	909	934	2,696	2,593
Topes	3,517	3,517	1,246	1,204
Cultural operations	412	422	2,559	1,688
Total	4,838	4,873	6,501	5,485

—	Area in acres.		Cost in rupees during the year.	
	1890-91.	1891-92.	1890-91.	1891-92.
Central Circle.				
Plantations	12,676	13,426	18,001	21 563
Topes	7,909	10,486	4,284	4,661
Cultural operations	3,764 + Mls. 100	3,831 + Mls. 100	1,789	2,143
Total	24,349 + Mls. 100	27,743 + Mls. 100	24,674	18,367
Southern Circle.				
Plantations	6,275	6,399	18,511	12,622
Topes	14,368	14,522	4,436	2,287
Cultural operations	1,961	2,172	2,486	1,995
Total	22,599	23,093	25,433	16,904
GRAND TOTAL	51,786	55,709	56,608	50,756

Bombay.—This subject has been reported on in considerable detail as regards the Northern Circle, but the Conservator's remarks, in respect of the Southern Circle, were, as in previous years, very brief and somewhat disjointed. In all three circles the operations of the year resulted in net additions of 2,085 acres and 28,549 acres to the previously reported gross area under regular plantations and cultural operations respectively. The total expenditure incurred was as follows:—Northern Circle, R14,150; Southern Circle, R4,730; Sind Circle, R3,218.

V.—Thinnings and Improvement Cuttings.

14. The majority of our Indian forests have been recklessly used for ages. They have been burned, and have, to an almost incredible extent, at one time or other, been hacked about and brought under shifting cultivation. The natural consequence of this treatment is that, in most instances, their character is far below the possibilities of soil and climate. They are full of growth of inferior species, many of which recover ground more rapidly than others of a better class; they are frequently overgrown with creepers, bamboos and weeds, or savannah vegetation; and the more valuable species in them are very often represented by crippled, diseased and prematurely-aged specimens.

It is the duty of the present generation of forest officers to eradicate the consequences of previous mal-treatment; and the judicious use of the axe is, for this purpose, if accompanied by a thorough protection of the forest under treatment, of greater importance than sowing and planting. It is evident that the progress of improvement must be a slow and gradual one, more especially as it is considerably impeded by the exercise of manifold rights which have been established over the forest areas, and of concessions which for various reasons it has been found necessary to grant.

Some improvement takes place from year to year in the progress made in this direction; but the attention which the importance of this vital question demands is not as yet quite as general as might be desired. The initiative regarding works of improvement lies no doubt with the Conservators and the Divisional Forest Officers, but to carry them into effect a considerable enhancement of the subordinate staff is required. This subject has been under consideration for some years past, but as yet no final decision has been arrived at, owing to the Secretary of State's reluctance to sanction the necessary expenditure.

Bengal.—Climbers were cut over 22,900 acres in seven divisions at a cost of R1,182, or R32 per square mile, the cost-rate for the previous year having been R82 per square mile

The Conservator reported that work of this kind will be annually required in the Kurseong, Tista, Darjeeling, Buxa, Puri, Angul and Jalpaiguri Divisions, and over much larger areas than have been hitherto operated on; but that unfortunately labour is not always procurable in the Terai, where the damage done by these pests is greatest.

North-Western Provinces and Oudh.—Creeper-cuttings took place in all three circles over a total area of 80 square miles, as against 65 square miles in 1890-91. The cost in the Oudh and Central Circles was R35 per square mile; but in the School Circle, where the quantity of climbers in the Ganges Division and in the Terai is generally great, the cost-rate was very high, amounting to R100 per mile. In this circle, also, badly grown and damaged trees were cut back over 6,215 acres at a cost of R3,304, and girdlings and thinnings were executed over 6,529 acres, costing R1,560.

Punjab.—As in previous years, operations under this head were confined for the greater part to the Chamba Division, where much of the arrears of work under the working-plan were done during the year. In these forests operations for the most part have for their object either to remove inferior species interfering with the existing stock of deodar or to lighten shade with a view to facilitate the natural reproduction of the species. In this way 1,638 acres were gone over, with what success, however, does not appear. Elsewhere, the operations were trivial and call for no remark.

Central Provinces.—In the Southern Circle, climbers were cut over 22,000 acres at a cost of R957, and in the Northern Circle over 12,400 acres, costing R226. Improvement fellings and early thinnings were also carried out over very small areas; but, as remarked in the Review for the past year, the administration of the forests is not sufficiently advanced to permit of improvement thinnings on a large scale.

Burma.—As in the previous year, considerable attention was paid in the Pegu Circle to the improvement of the forests by the removal of dominant overgrowth and creepers, and on a smaller scale similar work was carried on in the Upper Burma Circle. But, again, work of this description does not appear to have been attempted in the Tenasserim Circle, though its special importance has been commented upon by the Government of India.

Assam.—Improvement fellings were carried out to a small extent in the sál forests of Kamrup and Goalpára, and in the latter division climbers were cut over 5,760 acres at a cost of R440. The Conservator drew attention to the manner in which these forests, as well as other areas in the Garo Hills and in Darrang, are infested with this kind of pest, to the extirpation of which insufficient attention has been given in past years. The explanation of this lies partly in the difficulty experienced in finding sufficient labour.

Coorg.—Work under this head was confined to the cutting of climbers over 6,165 acres at a cost of R384, and to the facilitating of young self-sown teak plants over 30 acres.

Ajmere, Baluchistan and *Andamans.*—The administration reports do not refer to this question, and apparently nothing was done.

Berar.—The Conservator adverted to the *Bauhinia* creeper-nuisance in the Melghát forests, and stated that nothing but complete cover will suppress the pest, of which shoots attain 20 feet in length in six months: R632 were expended in cutting this creeper.

Madras.—Operations under this head during 1891-92 received a greater share of attention than in previous years, and the Board of Revenue stated that the carrying out of experiments in this direction on type-areas, particularly as regards improvement fellings, would not be lost sight of in future. The work of the year was confined to the cutting of climbers, the removal of thorny undergrowth (including the prickly pear), and crooked trees. In the teak plantations of South Malabar, weedings, thinnings and the pruning of parasitic plants was carried out at a cost of R4,086. It was stated that in South Arcot the scrub-exterminator belied its name in the destruction of the prickly pear. In various districts improvement thinnings on a small scale were undertaken, but the report is wanting in an intelligent summary and review, from the professional and technical aspect, of the work done in this direction, the report being confined to a disjointed and undigested statement of facts in numerous localities.

Bombay.—In his report for the Northern Circle, the Conservator has made some interesting remarks on the destruction caused by the *Loranthus* creeper in Thana, and on the efforts made in various divisions to eradicate the pestiferous prickly pear. As regards the former, all trees or branches affected by the pest are being cut out, as neglect of this measure results in the death of the species attacked. Efforts to eradicate the prickly pear were carried on with vigour. The Conservator reported this species as being enormously aggressive, and commented on its vitality. Simply felling the stems will not secure the desired end. The plants are first cut down branch by branch, after which the roots are stubbed out, and, finally, the whole is buried deep under ground. Nothing apparently was done under this head in the Southern and Sind Circles.

CHAPTER III.

WORKING AND OUTTURN.

15. The following table, compiled from the provincial returns, exhibits the outturn of the various classes of forests :—

Provinces.	Reserved Forests.			Protected Forests.			Unclassed Forests.			Average outturn per square mile. Reserved Forests.			Protected Forests.			Unclassed Forests.		
	Timber and fuel.	Bamboos.	Minor produce.	Timber and fuel.	Bamboos.	Minor produce.	Timber and fuel.	Bamboos.	Minor produce	Timber and fuel.	Bamboos.	Minor produce	Timber and fuel.	Bamboos.	Minor produce.	Timber and fuel.	Bamboos.	Minor produce.
	C. feet.	No.	R	C. feet.	No.	R	C. feet.	No.	R	C. feet.	No.	R	C. feet.	No.	R	C. feet	No.	R
Bengal	17,166,307	5,731,466	81,118	10,340,170	3,162,641	64,177	1,249,276	10,339,837	10,745	3,294	1,100	15½	4,741	1,450	29	275	229	2
North-Western Provinces and Oudh	11,202,941	15,524,157	3,42,073	578,871	132,580	4,469	96,118	1,074,099	3,970	2,972	4,119	91	6,158	1,410	47½	1,780	19,891	78½
Punjab	4,101,546	648,460	1,30,745	1,933,087	...	1,16,719	25,314,480	29,925	3,15,862	2,392	377	81	4,019	...	243	6,534	8	56
Central Provinces (a)	8,516,698	17,761,101	(b) 7,65,102	...	...	...	...	...	...	433	902	38	...	...	...	...	...	...
Burma (Lower)	1,997,558	3,515,025	36,607	...	...	...	12,577,570	3,428,878	14,848	...	...	...	...	...	..	Area	not	known
Burma (Upper)	1,512,465	(c) 11,845,936	(c) 2,37,287	7,346,618	...	...	...	...	...	1,428	676	13½	446	...	...	...	...	...
Assam	1,302,493	1,319,665	3,333	829,195	1,792,922	5,350	2,723,590	1,037,464	55,914	361	365	1	909	1,966	6	501	191	10
Coorg	205,848	319,477	4,878	(d) 388,996	156,110	(e) 30,918	...	...	...	1,822	2,827	43	524	210	41½	...	...	...
Ajmere	193,400	8,133	57,243	...	...	...	...	...	...	1,427	58	412	...	...	...	...	...	...
Baluchistan	158,710	...	1,740	...	...	...	...	...	...	1,935	...	21	...	...	...	...	..	..
Andamans	...	...	...	...	...	...	1,566,510	251,480	3,116	...	...	...	...	...	...	801	435	2
Berar	276,716	2,514,605	24,635	(f) 1,903,079	(f) 723,731	(f) 49,483	...	...	...	290	2,002	20	599	228	46	..	...	..
Madras (g)	...	...	...	.	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Bombay (h)	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..	...	..

(a) From reserved forests only in the case of timber, fuel and bamboos; from total forest area in the case of minor produce.
(b) Besides mohwa fruit valued at R1,900, which was given free of charge to the collectors of that produce in the Southern Circle, in consideration of an unusual rise in the price of food-grains.
(c) From the total forest area.
(d) Includes 7,269 cubic feet of sandalwood.
(e) Of this, R1,107 were on account of produce from the total forest area, the remainder represents the value of cardamoms from protected forests.
(f) From district reserved and unreserved forests.
(g) The forests in the Madras Presidency yielded 17,074,110 cubic feet of timber and fuel, 31,148,065 bamboos, and R6,40,812 worth of minor-produce. Dividing these figures by the 17,883 square miles under the Forest Department, a proportion is obtained of 955 cubic feet of timber and fuel, 1,742 bamboos, and R36 worth of minor produce per square mile respectively.
(h) The outturn of the forests in the Bombay Presidency amounted to 36,034,658 cubic feet of timber and fuel (exclusive of 139 trees, 964 pieces, and 55 khandis of sandalwood the cubic contents of which is not given); 6,424,471 (besides 9,399 cart-loads and 13,804 head-loads) bamboos, and R8,53,985 worth of minor produce. Dividing these figures by the 14,527 square miles under the Forest Department, a proportion is obtained of 2,481 cubic feet of timber and fuel, 442 bamboos, and R59 worth of minor produce per square mile respectively (not taking into account the sandalwood and cart-loads and head-loads of bamboos above mentioned).

Bengal.—The total outturn in timber was 72½ lakhs of cubic feet, of which only 24,000 cubic feet were removed by departmental agency, the previously existing policy in this direction having been discouraged by the Conservator. Under fuel, 215 lakhs of cubic feet were removed, or 14 lakhs in excess of the figure for 1890-91. The export of bamboos, however, declined from 204 to 192 lakhs, but the value of the minor forest-produce extracted, free-grants excepted, was 1 lakh, or a little more than in the previous year. With reference to the remarks in the last Review concerning the Sundarbans forests, a satisfactory feature of the year's operations was the recovery of the timber trade in this, one of the largest revenue-producing divisions in India. Owing to a change in the manner in which volume of material was calculated, the figures given in the above statement cannot readily be compared with the returns for 1890-91. The outturn of timber in reality exceeded that of the previous year by 20 per cent., while the quantity of fuel removed, otherwise than under free-grants, was also greater by 8 per cent. These results indicate a healthy expansion of the operations of the department and tend to show that the policy of the Conservator, in discountenancing departmental operations for the extraction and sale of forest-produce, is well-founded.

North-Western Provinces and Oudh.—The estimated quantities of timber and fuel, and value of minor forest-produce removed by right-holders or granted free during the year were, respectively, 1,609,727 cubic feet, 3,395,993 cubic feet and R75,445. Inclusive of these figures, which are necessarily only rough approximations, the total outturn under the heads of timber and fuel was, respectively, 4,205,000 cubic feet and 7,673,000 cubic feet, while minor produce to the value of R3,50,512 was also extracted. These figures exceed those of the

previous year, the yield of fuel in particular having been greater by 1,226,000 cubic feet. Neglecting the above estimates of produce granted free, there was a decrease, as compared with the year 1890-91, of 485,800 cubic feet of timber removed by Government agency, principally due to the fostering in the Oudh Circle of the system of direct sales to purchasers; and the export of timber thus sold increased by 245,600 cubic feet. There was a diminution in the quantity of fuel extracted by purchasers of 222,500 cubic feet.

Punjab.—The total quantity of timber and fuel removed during the year was 313½ lakhs cubic feet, or 3¾ lakhs less than in 1890-91. This decrease was, however, stated to be apparent only, owing to a change in the system of calculating the quantity of fuel consumed by right-holders. It will be seen from the Reviews for 1889-90 and 1890-91 that, for the third year in succession, the methods of estimating the outturn from the forests have been altered, so that comparisons between the returns for different years are not easily made or rendered intelligible. Neglecting, however, the uncertain figures, *i.e.* those for produce removed by right-holders, the outturn of timber and fuel respectively was 1,953,572 cubic feet and 3,821,235 cubic feet. Bamboos to the number of 678,385 (valued at R12,854, or R15,927 more than in 1890-91) were removed. The total estimated value of the minor forest-produce removed was R4,72,326, as against R4,64,255 in the previous year. These figures, however, are in great part estimates, founded on no certain basis.

Central Provinces.—From the above table it will be seen that there were removed from the reserved forests during the year 8,516,698 cubic feet of timber and fuel and 17,761,101 bamboos, together with minor produce from all classes of forests to the value of R7,65,102. The output of timber increased from nearly 14 lakhs cubic feet in 1890-91 to 17½ lakhs in the year under review; the fuel outturn also rose from 58 to 67½ lakhs cubic feet, the increases under both heads occurring, for the most part, in the Southern Circle. The number of bamboos removed was increased, *viz.* from 16 to 17¾ lakhs, and the value of minor produce extracted was also greater by R65,000. Departmental operations slightly increased in the Northern Circle, but fell off greatly in the Southern Circle, from which it was reported that agency of this description is as a rule both unnecessary and inexpedient. Endeavours were made to reduce the cost of forest-produce of which the raiyat is most in need. In this connection the Supreme Government, when reviewing the reports, remarked that a reduction of the existing rates may have less effect in cheapening cost to the consumer than the construction of forest and export roads, as the cost of transport forms the chief item in the price of forest-produce.

Burma.—In Lower Burma 11,773,094 cubic feet of timber were extracted, as against 8,921,630 cubic feet in the previous year. Of the total output 58,281 tons, or 3,153 tons less than in 1890-91, were teak, and 177,047 tons of other kinds of timbers. The decline in the teak outturn occurred in the Tenasserim Circle, but the cause of the decrease was not reported. The increase, amounting to 60,293 tons, in the export of timbers other than teak, is the most noteworthy feature in the transactions of the year. It is explained in part by greater activity in boat-building, and partly by an increased demand for railway sleepers and shingles of pyinkado and pyinma. As regards fuel, the outturn declined by 13 lakhs of cubic feet, the quantity removed having been 2,802,000 cubic feet.

In Upper Burma, also, there was a large increase in the exports of the unreserved kinds of timber, accompanied by a decline in the exploitation of teak. Of the latter timber, during the three years ending 1891-92, there have been removed 180,609 tons, 160,713 tons and 117,533 tons respectively; while the export of the unreserved woods has increased during the same period from 8,335 tons to 29,451 tons. At the same time the gross total of all kinds of timber removed has been less from year to year. In all three circles, 17,797,309 bamboos were cut, or 469,378 more than during 1890-91. The value of minor produce increased from R2,68,284 to R2,88,737. The principal items of minor produce are cutch and rubber. The receipts derived from these sources were respectively R1,48,698 and R1,18,343.

Assam.—The total quantity of timber and fuel removed from the forests during the year, *viz.* 4,855,278 cubic feet, was 300,570 cubic feet more than in 1890-91. The outturn of timber rose from 19¼ lakhs to 22½ lakhs cubic feet. This increase, which is a satisfactory feature of the year's work, was occasioned partly in consequence of departmental timber operations being developed, but was principally owing to the largely increased quantities of wood removed by purchasers. Under fuel, the return shows a small decrease in the total quantity removed. There was, however, a large increase in the removals of timber and fuel by purchasers, amounting to 3¼ lakhs cubic feet, the actual decrease being under the unremunerative head of free-grants. The number of bamboos cut was increased by 111,520, and minor produce was removed to the gross value of R64,597, or R2,132 more than in the

preceding year Rubber sales realised R25,585, a figure slightly in excess of that of the previous year, but considerably less than the revenue for any year as far back as 1882-83. The rubber question, which was adverted to in the Review for 1890-91, was under consideration during the year, and, after its close, the Supreme Government sanctioned the levy of a duty of R12 per maund on all rubber, from whatever source extracted, exported from Assam.

Coorg.—The total outturn during the year was:—timber, 398,844 cubic feet; fuel, 196,000 cubic feet; bamboos, 475,587; and minor produce to the value of R35,796. Under departmental operations, 76,231 cubic feet of timber and 175 tons of sandalwood were removed, as against 6,331 cubic feet and 142 tons in 1890-91. This increase is explained by the fact that fellings were, as mentioned in the last Review, temporarily suspended in 1890-91. The method of collecting sandalwood was under consideration, and it was hoped to considerably decrease expenditure on this account. The departmental cutting of bamboos and fuel was stopped during the year, as these works were not financially successful. The returns which, however, in this respect are unreliable, show a large increase in the quantity of timber and fuel removed by purchasers.

Ajmere.—The removals of produce under all heads were increased as compared with the previous return. The quantity of timber (7,302 cubic feet) was double, and the value of minor produce including bamboos rose from R30,946 to R57,452, principally on account of grass. Of the latter sum, however, all but R7,641 is the estimated value of produce granted free to or removed by right-holders.

Baluchistan.—The gross outturn in timber and fuel amounted to 158,710 cubic feet, or 13,685 cubic feet more than in 1890-91. Of the total extracted, only 6,122 cubic feet were timber, of which 2,522 cubic feet were worked out departmentally. The value of the minor produce removed was R1,740 as against R1,721 in the previous year.

Andamans.—While the quantity of fuel removed, *viz.* 11½ lakhs cubic feet, remained almost unchanged, the outturn of timber declined from 529,727 cubic feet in 1890-91, to 415,874 cubic feet in the year under review. The decrease was on account of timber both for local consumption and for foreign export. The number of trees girdled was 4,543, including 1,841 padouk, and two cargoes of this species, aggregating 1,895 tons, were despatched to England, shipments being also made for the Burma railways and for the gun-carriage manufactory at Bombay. The portable tramway for the extraction of timber, referred to in the Review for 1890-91, was extended by one mile. A full and interesting report on the saving, derived from the use of this line in the working out of padouk logs, was furnished by the Deputy Conservator. The estimated net profit for the year was R6,149, or 27·5 per cent. on the capital, allowing 10 per cent. for depreciation of material. The profits would have been considerably greater had it been possible to utilise the tramway to its fullest capacity.

Berar.—The outturn of timber and fuel (621,450 cubic feet and 1,558,341 cubic feet) was less than in the previous year by 79,402 and 72,689 cubic feet respectively. There was an increase of 43,628 cubic feet in the timber removed from demarcated State forests, owing to the demand for the produce of the Melghât improvement fellings. The outturn of timber from forests of other classes was less by 123,030 cubic feet, the decrease being due to the imposition in the open forests of restrictions on fellings. The considerable decrease in the output of fuel occurred in all classes of forest, the number of bamboos cut slightly increased, and the value of the minor produce removed was greater by R21,624 than in the preceding year.

Madras.—The following table, extracted from the orders of the Local Government on the administration report, compares the yield under the main heads for the three years ending 1891-92:—

—	Timber including sandalwood.	Fuel.	Bamboos in number.	Minor produce in rupees.
	C. ft.	C. ft.		
1889-90	3,537,473	13,219,507	12,694,181	5,37,631
1890-91	3,802,497	12,168,215	18,223,417	6,58,311
1891-92	3,086,937	13,987,173	31,148,005	6,40,842
Increase or decrease in 1891-92 as compared with 1890-91	—715,560	+1,818,958	+12,924,618	—17,469

The fall in the exploitation of timber was due in part to the fact that the extensive working of private forests has filled the markets with cheap timber; but, although coal is now competing in many places with wood for fuel, it will be seen that the quantity of firewood extracted was considerably in excess of the two preceding returns. The Board of Revenue in its report came to some interesting conclusions as to the comparative cost of exploitation by Government and by private agency. According to the Board's estimates, there is a net loss in the case of fuel, bamboos and minor produce worked out by the Government, while the profit from timber extracted by this agency is thrice as great as in the case of private agency.

Bombay.—The total outturn from the forests in the three circles was :—timber, 5,357,494 cubic feet; fuel, 30,677,164 cubic feet; 6,424,471 bamboos; and minor produce to the estimated value of R8,53,385. The corresponding figures for the previous year were :—timber, 6,842,524 cubic; fuel, 26,422,016 cubic feet; 6,286,825 bamboos; and minor produce to the estimated value of R7,19,416. The Local Government in its orders on the administration report has not commented specially on this subject, full details regarding which, however, appear in the circle reports.

CHAPTER IV.

FINANCIAL RESULTS.

16. The following table exhibits the figures for gross and net revenue in the various provinces, as compared with the average figures for the five years ending with 1890-91 :—

PROVINCE.	Revenue.		Surplus.		Deficit.		Proportion of Surplus to Gross Revenue (1891-92).	Net Revenue per square mile of land under control of Forest Department (1891-92).
	1891-92.	Average for preceding 5 years (1886-87 to 1890-91).	1891-92.	Average for preceding 5 years (1886-87 to 1890-91).	1891-92.	Average for preceding 5 years (1886-87 to 1890-91).		
	R	R	R	R	R	R	Per cent.	R
Imperial	6,688	4,836	...	...	59,100	78,734	...	...
Bengal	7,89,553	6,96,889	3,66,623	2,96,574	...	...	46	31
North-Western Provinces and Oudh	17,31,514	15,27,170	7,73,303	6,31,726	...	...	45	197
Punjab	10,20,074	9,48,213	3,79,799	2,85,772	...	...	37	62
Central Provinces	13,59,900	11,20,165	5,55,985	4,89,580	...	...	41	28
Burma (Lower)	28,58,114	25,27,851	15,32,993	13,75,894	...	...	53	273
Burma (Upper)	13,27,300	10,87,049	9,53,441	7,90,132	...	...	72	54
Assam	3,36,129	2,97,899	68,604	59,886	...	...	20	7
Coorg	1,82,897	1,98,163	96,037	45,137	...	...	53	112
Ajmere	19,799	13,200	5,813	...	...	2,948	29	39
Baluchistan	20,609	12,686	...	...	9,888	7,112	...	...
Andamans	2,72,338	1,12,506	92,429	38,352	...	...	34	47
Forest School	1,788	812	...	...	42,559	31,539	...	...
Forest Surveys (Imperial)	257	584	...	...	26,625	25,194	...	...
TOTAL	99,26,960	84,63,023	47,86,855	38,67,526	...	...	48	61
Berar	5,11,185	4,13,667	3,12,819	2,39,437	...	...	61	71
Forest Surveys (Berar)	...	249	...	...	...	23,348	...	...
Total Bengal Presidency	1,04,38,145	88,76,939	50,99,674	40,83,615	...	...	50	62
Madras	16,94,216	14,97,974	3,69,962	3,15,719	...	...	22	21
Bombay	32,84,649	30,68,272	13,53,192	12,21,981	...	...	41	93
GRAND TOTAL	1,54,17,010	1,34,43,185	67,22,828	56,21,315	...	...	44	58

It will be seen, on reference to the last Review, that, while the gross receipts in the three presidencies rose from R1,49,67,000 in 1890-91 to R1,54,17,000 in the year under review, the surplus declined from R69,04,000 to R67,23,000. Notwithstanding, the results, if examined in detail, are satisfactory, and indicate efficient progress and good administration. The receipts would have been largely swelled in various provinces, as in Upper Burma, in Madras and in Bombay, had it not been for natural causes over which there could be no control. And it will be observed, from the analytical table printed below, that a large portion of the gross charges was on account of capital expenditure going to build up or improve permanently in value the forest property of the State.

		Amount. R
Gross Receipts	(a) Wood	1,12,46,538
	(b) Minor forest produce	15,35,065
	(c) Grazing	19,56,506
	(d) Revenue from forests not managed by Government	2,84,303
	(e) Miscellaneous	3,94,508
	TOTAL REVENUE	1,54,17,010

				Amount.	Proportion of Expenditure to Gross Revenue
				R	Per cent.
Expenditure	A Recurring.	(a) Administration.	(i) Superior Staff	17,65,749	11 45
			(ii) Subordinate Staff (including Rangers, Foresters, and Guards)	12,56,781	8 15
			(iii) Office Establishments (including Contingencies).	6,41,083	4 16
		(b) Working	(1) Extraction	28,85,611	18 72
			(2) Roads and Buildings	3,13,365	2 03
			(3) Fire-protection	2,40,096	1 56
			(4) Cultural operations	3,26,905	2·12
			(5) Live-stock, stores and plant	2,50,124	1·62
			(6) Working-plans*	29,605	0·19
			(7) Rent for leased forests	1,14,369	0 74
			(8) Miscellaneous (including Home charges).	1,20,957	0·79
		(c) Expenditure on realization of revenue from forests not managed by Government		9,378	0 06
		(d) Forest Science and Education (including all "A" and "B" Charges of Forest School)		80,417	0 52
			TOTAL	80,34,435	52·11
	B Extraordinary.	(e) Forest Settlements (including compensation)		35,881	0·23
		(f) Forest Surveys		4,86,897	3·16
		(g) Forest Demarcation		1,36,969	0·89
			TOTAL	6,59,747	4·28
			GRAND TOTAL EXPENDITURE	86,94,182	56·39
			Net Revenue	67,22,828	43 61
					100·00

* Exclusive of "B" Charges

A comparison of the gross revenue with expenditure for periods of five years since 1866-67 is exhibited in the following table, from which it will be seen that the percentage of expenditure has continuously decreased :—

Quinquennial periods.	Gross Revenue.	Expenditure.	Percentage of Expenditure to Gross Revenue
	R	R	
1866-67 to 1870-71	42,13,000	29,94,000	71·06
1871-72 to 1875-76	63,21,000	42,19,000	66·74
1876-77 to 1880-81	68,59,000	47,29,000	68·94
1881-82 to 1885-86	1,02,04,000	64,96,000	63·66
1886-87 to 1890-91	1,34,43,000	78,22,000	58·18

This is not entirely a matter for congratulation, as it tends to show that the State does not now spend sufficient of the annual revenue on the maintenance and enhancement of its forest capital.

Bengal.—The gross revenue, R7,89,553, exceeded that of the previous year by R62,161, and was the highest hitherto realized. Had it not been for exceptionally large items of capital expenditure, the surplus of R3,66,623 would also have exceeded any previously

obtained. The financial results were, in fact, very satisfactory, and there was an improvement in this respect in all the divisions except Jalpaiguri, where the surplus of 1890-91 was turned into a deficit. The Conservator gave it as his decided opinion that the results would be much more favourable were there an additional Conservator to supervise the working of this very large circle. Judging by the results obtained under the energetic management of the present Conservator, Mr. Dansey, there can be little doubt as to the general correctness of his opinion.

North-Western Provinces and Oudh.—The gross revenue was nearly a lakh in excess of that for the preceding year, and greater than the receipts for any year as far back as 1874-75. The results were exceedingly satisfactory, the surplus being the largest ever obtained. In Oudh, not only were the receipts the highest on record, but they were greater than the revenue ever yielded by either of the other circles. The revenue alone fell off in the Central Circle, owing to diminished receipts in Kumaon. In the School Circle the results were excellent, the surplus of the Jaunsar Division being the highest for the province.

Punjab.—The gross receipts amounted to R10,20,074 or R1,86,000 in excess of the previous return. This increase was due to the sale at favourable rates of large stocks purposely withheld from the market, as mentioned in the last Review. The wisdom of restricting the sales in 1890-91 was proved; for not only was the unrealized balance of revenue on account of unsold produce recovered, but, allowing for this, the receipts for the year under review show a satisfactory increase. The surplus of R3,79,799 was R1,62,000 in excess of the average for the preceding 15 years, and nearly two lakhs above the surplus of 1890-91.

Central Provinces.—There was a considerable increase in the gross receipts, *viz.* from R12,13,461 in 1890-91 to R13,59,900 in the year under review. This increase occurred in both circles, but especially in the Northern, where it is attributed to more vigorous management than was possible when the entire forest administration in the province was supervised by one Conservator. The enhancement of the receipts was occasioned, as in the previous year, mainly by an increase in the quantity of forest-produce removed by purchasers. The contraction of direct departmental working, which has been mentioned above, took place principally in the Southern Circle. The surplus of R5,55,985 exceeded that of the preceding year by R78,078.

Burma.—In Lower Burma the gross receipts were R28,58,114, as against R26,77,671 in the preceding year. In the Pegu Circle the revenue was R1,04,192 in excess of the previous return, the sales of Government timber realizing nearly three lakhs of rupees more than in 1890-91. In Tenasserim, also, the receipts were in excess by three-quarters of a lakh, owing mainly to the same cause. The total expenditure for both circles, namely R13,25,121, was in each case greater than in the preceding year. The net revenue was R15,32,993, or R58,600 less than the previous figure. The decrease is attributable to large expenditure on account of Government timber in Pegu, and to increased outlay on forest surveys and works of improvement in Tenasserim.

In Upper Burma the figures for receipts, charges and surplus, were, respectively, R13,27,300, R3,73,859 and R9,53,441. The surplus was nearly 4 lakhs less than that for 1890-91, the decrease being due to less timber being extracted by lessees on account of the unfavourable floating season. The decrease on this account was unavoidable, and moreover would be recouped in succeeding years. Neglecting revenue derived from lessees' timber, the gross receipts exceeded those of 1890-91 by R1,30,000.

Assam.—The financial results were satisfactory. The receipts amounted to R3,36,129, or R9,336 more than in the previous year, the charges were also materially less, and the surplus of R68,604 amounted to 20 per cent. of the gross revenue, as compared with 13 per cent. in 1890-91. The receipts were enhanced under almost every head, and it was stated that a considerable further increase of profits may be expected in consequence of the recently introduced duty on cutch.

Coorg.—Both the gross and net revenue were the highest on record. The revenue exceeded that of 1890-91 by R17,336, while the charges (R86,860) were but R21,042 more. The increase in the receipts was due principally to sales of ordinary timber, of sandalwood and of cardamoms. It was stated in the report for the year that a large decrease in the cost incurred in sandal exploitation might be expected as a result of improved methods of working.

Ajmere.—The results showed a marked improvement as compared with the preceding year. The surplus of R5,813 exceeded that of 1890-91 by R3,267. The increase in the receipts, R19,799 as compared with R15,266, was mainly on account of grass and grazing. The value of produce granted free to the people was R12,455, or more than double the actual revenue realizations.

Baluchistan.—The gross receipts and charges were, respectively, R20,609 and R30,497. The deficit of R9,888, however, owing mainly to the revenue having risen by nearly R5,000, was R3,839 less than in the previous year; and considering the conditions under which the forests are worked, these results must be considered good. The receipts were the highest on record, and there is a prospect of further increase.

Andamans.—The increases under the heads of receipts, charges and surplus were, respectively R1,14,012, R49,856 and R64,155. The expenditure was increased by reason of the cyclone already referred to; otherwise the improved means for the extraction of timber from the forests would have resulted in still better financial results. The heavy charges were, however, more than counterbalanced by enhanced receipts, mainly on account of padouk sales in London.

Berar.—The gross receipts, *viz.* R5,11,185, were R24,000 in excess of the previous figure; but, in consequence of enhanced charges, the surplus was reduced by over R5,300. Nevertheless, a perusal of the administration report shows that the results, as in previous years, were very satisfactory. The proportion of surplus to gross revenue, *viz.* 61 per cent., is high—much higher indeed than in any other province except Upper Burma. And although the surplus was slightly diminished, as compared with that for 1890-91, it was R73,000 in excess of the average for the preceding quinquennial period. The receipts under timber declined, fellings have been curtailed for good reasons, but the realizations under all other important heads increased.

Madras.—The receipts were R16,94,216, or R1,01,192 less than in 1890-91, but considerably in excess of those for any other year. The fall was due to an unfavourable season, and to the substitution of coal for wood-fuel on certain railways. The surplus of R3,70,000, although considerably less than the corresponding figures for the previous two years, was nevertheless more than half a lakh in excess of the average for the five-year period ending with 1890-91.

Bombay.—The gross receipts (R32,84,649) were R3,571 less, and the total charges (R19,31,457) R61,570 more than in the preceding year, the surplus being diminished by R65,141. This falling off occurred in the Southern Circle, where the net revenue declined from R6,45,000 to R4,38,000 owing to scarcity and paralysis of trade, causes which are however of a temporary nature. The proportion of net to gross revenue was as follows for the three circles concerned:—Northern 89·7 per cent.; Southern 61·6 per cent.; and Sind 53·8 per cent.

CHAPTER V.

I.—Establishments.

17. The reorganization of the Upper Controlling staff provides (apart from Upper Burma, where the reorganization has not as yet been completed, and excepting any new forest areas which in other provinces may be brought under the management in the Forest Department) sufficiently for the control the Department has to exercise. Even at the time of writing, however, 19 vacancies exist, which to a considerable extent accounts for the complaints of Local Governments that the superior staff is undermanned. The most serious question, as regards forest administration, which has occupied the Government of India for some years, is the reorganization of the staff of rangers and o other subordinates. The importance of the reorganization of these establishments has been urged on the Government of India by all Local Governments, and has been fully recognized by the Imperial Government, but the sanction of the Secretary of State has not been obtained.

Bengal.—The Conservator's report, as regards this subject, again showed that the condition of affairs was unfavourable to good and economic administration. The weakness of the forest staff, both in number and professional qualification, is a serious matter. Of the superior officers, two died during the year, and with the inadequate staff, no substantial progress can be expected in the organization of forest business, in spite of the greatest exertions: Office establishments were well reported on, but the Conservator, as in the preceding year, had little to say in favour of the executive and protective staffs, which the Local Government admits to have been for some time past in great need of reinforcement. The strengthening of these establishments, in connection with their reorganization throughout India generally, was under consideration during the year. The Lieutenant-Governor was again unable to accept, without further experience, the Conservator's conclusion that the Bengali is unsuited for forest work. It is possible that the better class of natives hold back owing to the unsettled state of the organization of the Subordinate Service and to unsatisfactory prospects therein. No recruits were obtained from the Dehra School during 1891-92, and of the eight native officers previously received, only one remained in the circle at the close of the year.

North-Western Provinces and Oudh.—In the reports from the three circles the key-note is the inadequacy of the executive staff, although the School Circle appears to be, comparatively speaking, well served in this respect; and it is satisfactory that the Local Government recognizes the special necessity of maintaining the working of these forests, which are of Imperial interest for teaching purposes, at a high level of efficiency. In the Central Circle there remained at the close of the year only two trained rangers; so that, as will be seen from the Review for 1890-91, no improvement in this respect took place during the year. The Banda, Lalitpur and Jhánsi Divisions, of which the management had vested previously with the Revenue officers, were constituted one forest division under an officer of the department; and, in the Oudh Circle, the Bhira Division was amalgamated with that of Kheri. The conduct of the subordinate officials in the School and Central Circles was well reported on, but, in Oudh, 27 men were dismissed, or criminally prosecuted, and serious irregularities in the working of the Bahraighàt timber depôt were discovered.

Punjab.—The reorganization of the superior staff, in conjunction with those of the Central Provinces, Berar and Croog, was effected during the year, the officers in the various provinces forming one cadre for purposes of promotion. But the change did not result in any increase in the number of available gazetted officers, and the Conservator again complained of the inadequacy of the superior staff. In this connection, it would appear that Extra-Assistant Conservators are not as yet utilized in holding charge of divisions to the extent originally intended.

Central Provinces.—The condition of the subordinate forest staff during the year was little better than was reported for 1890-91. Punishments were awarded to 20 per cent. of the staff in the Southern and to 27 per cent. of total number of employés in the Northern Circle. In both circles the percentage of punishment to number of men was highest in the class of forester, the percentages being respectively 44 and 39. This class was reported

to fall short of the required standard of ability, and, as it seemed to the Chief Commissioner, of integrity as well.

Burma.—The Conservator reported that the staff of gazetted officers was much below the required strength. In reviewing progress made during the year, the Chief Commissioner commended the services of officers generally, particularly those of Mr. Oliver, the Conservator of the Upper Burma Circle.

Assam.—The shortcomings of the establishment in certain localities in the matter of fire-protection have been already alluded to. The Conservator reported that the staff of superior officers available for work was inadequate, owing to absences on leave and other causes, and remarked on the difficulty experienced, as in the Bengal Circle and elsewhere, in successfully employing Bengalis on forest work under the conditions obtaining in Assam.

Coorg.—The only change of importance was the addition of an appointment of Extra-Assistant Conservator, which, however, was not filled during the year. Service among the subordinates (foresters and guards) is unpopular. Several foresters were dismissed, and in all 38 members of the staff were punished, as compared with an equal number in 1890-91.

Ajmere.—There were no changes, and officials of all grades were reported to have done good work under Sirdar Hira Singh in charge of the division.

Baluchistan.—The members of the forest establishment were reported as having done well, though the urgent need of a better class of Range Officers was remarked upon. The Deputy Conservator observed that "the Pathan Guards have improved during the year, and are beginning to realize that they must give some return for their pay, and no longer regard it as a species of blackmail."

Andamans.—An Extra-Assistant Conservator was posted to the islands during the year. Otherwise the staff was unchanged, but the Deputy Conservator reported that it is difficult to obtain fairly good men to fill the post of forester.

Berar.—The services of the forest staff were especially meritorious in the matter of fire-protection and the opening out of communications, but the administration report contains nothing on this subject calling for special comment.

Madras.—This subject was not alluded to by the Local Government in its orders on the administration report, which itself contains nothing noteworthy, except as regards the appointment of an additional (third) Conservator to hold charge of the Central Circle forests.

Bombay.—The Presidency is now divided into four circles, but only two Conservatorships are available. This is not satisfactory. The subordinate establishment is better organized in Bombay than in almost any other province in India.

II.—Experiments.

18. The following jottings summarize the information on this subject recorded in the administration reports for the year:—

Bengal.—The padouk plants in the Chittagong Division, which were raised from seed, as noted in the last Review, attained a height of from 9 to 10 feet, but the mahogany seedlings, which at first throve well, were later on attacked by insects, a vicious growth resulting. The introduction of European species into the Darjeeling District has not succeeded. The plantation of Spanish chestnuts was reported to have failed; and although germination of the seeds of the Douglas and Scots pines took place, the seedlings died off rapidly.

North-Western Provinces and Oudh.—Experiments for the determination of the girth-increment of sâl were continued in the Central Circle, the Conservator coming to the conclusion, which was not borne out, however, by the statistics brought forward, that the annual production of wood per acre in the case of this species is greater in the unthinned than in the thinned forests. Further information on this interesting subject will no doubt be forthcoming in the reports for the year 1892-93. In the Kumaon Division, experiments showed that the yield of katha per cubic foot of timber is inversely proportionate to the girth of the khair tree from which the product is obtained. In Gorakhpur, sâl seedlings were successfully reared on clearances made according to the "strip method," but the expenditure, if the method was carried out on a considerable scale, would be prohibitive. In the School Circle, experiments continued to be conducted with success in the direction of tar and turpentine manufacture, and there is a prospect of these valuable forest products finding a ready market in Upper India.

Punjab.—The endeavours to acclimatize in the province the exotics *Robinia pseudo-acacia* and *Albizzia lophanta* met with even a less measure of success than in the preceding year Nevertheless the experiments are to be continued. It is hoped to establish these species in

the lower hills of the Outer Himalaya, but the plants are susceptible to extremes of atmospheric conditions, and prospects are not encouraging.

Central Provinces.—The report for the Northern Circle contained, as usual, nothing under this head. In the Chanda District of the Southern Circle a small number of sandal plants were raised in a locality recommended years ago by Sir D. Brandis. The young seedlings, 18 months of age, are in a promising and vigorous state of growth, averaging 1½ to 3 feet in height. The result of this experiment, when some years have elapsed, will be interesting, and may lead to the introduction of this valuable species on a large scale.

Burma.—From the Tenasserim Circle it was reported that the plants of *Hevea braziliensis*, set out in former years, continue to flourish. Of 46 large trees, the average girth was 42 inches, showing an annual growth of 4 inches. The smaller trees are over 8,000 in number, and so well do they grow that they will probably be tapped for rubber in a few years' time. The Conservator of the Upper Burma Circle forwarded detailed information regarding the success which has attended the introduction of various kinds of *Eucalypti*. During the preceding 8 years, 3,800 plants were put out, of which only 665 survived, and it was stated that the trees would not live in the plains without constant care and attention, but that there is no reason why they should not thrive in the hills. The Para-rubber plants at Bhamo continued to do well, but it was decided to abandon further attempts to introduce the *Excelsa, Gerardiana, Smithiana* and *Webbiana* pines or firs, as these species had all proved failures.

Assam and Coorg.—Nothing appears to have been attempted under this head during the year.

Baluchistan.—Of the species introduced during 1890-91, as noted in the last Review, the Himalayan conifers and grafted fruit trees succeeded; of the foreign seeds those of *Pinus maritima* and a few *Pinus grandis* did well; and seeds of a number of species, principally from the Himalaya, germinated successfully.

Andamans and Berar.—Nothing was recorded in the administration reports.

Madras.—Detailed notes on the acclimatization and propagation of exotics are appended to the Board of Revenue's administration report. The cultivation of the edible date was fairly successfully continued during the year, but the Government remarked that insufficient time has elapsed to enable true results to be gauged, and no practical progress has been made in inducing the people to cultivate the species themselves. The propagation of mahogany was very successful in the Madurà District.

Bombay.—From the Northern Circle it was reported that no new work in this direction was attempted during the year. The Egyptian date-palms are nowhere very successful, and the Australian *Eucalypti* do not find the conditions in the presidency so favourable as in other parts of India; for example, the Nilgiris. The reports from the other circles contain nothing of special interest under this head.

III.—Exports of Forest-produce.

19. The following statement exhibits the sea-borne exports of forest-produce from India to foreign countries in 1891-92:—

Articles.	Quantity in tons of 20 cwt; in the case of Teak, cubic tons.		Valuation at port of shipment in 1891-92.	
	Average of five years (1886-87 to 1890-91).	In 1891-92.	Total.	Per ton.
			R	R
Caoutchouc	447	467	11,72,370	2,510
Shell-lac	5,032	5,514	60,67,924	1,100
Lac-dye	20	3	2,500	833
Sandalwood, Ebony and other ornamental woods	Information	not available	8,41,938	...
Cutch and Gambier	11,418	9,853	31,72,992	322
Myrabolams	33,417	39,540	39,36,902	100
Teak	46,229	48,190	47,48,517	99
Cardamoms	102	124	3,18,957	2,572
Total in 1891-92	...	...	2,02,62,100	...
Total in 1890-91	...	...	1,77,40,556	...
Increase in 1891-92	...	...	25,21,544	...

IV.—Technical Education and Recruitment.

20. The number of officers who have received a professional training in Europe was during the year raised to a total of 143 by the arrival of 11 passed students from Coopers Hill. Of this total 9 have retired and 21 have died, the total loss being 30 or 21 per cent., which seems very high, as only one of the officers now on the list has upwards of 25 years' service. The strength of the Upper Controlling staff of the Department during each of the 30 years ending with 1893, and the percentage of losses by death and from other causes during that period, was as follows The losses arising from retirement cannot, I think, be accepted as indicative of what the results will be after the Department has been in existence for a longer period :—

Year.	Number.	Year	Number.	Year.	Number
1864	43	1874	137	1884	170
1865	57	1875	139	1885	172
1866	64	1876	143	1886	169
1867	73	1877	144	1887	172
1868	78	1878	153	1888	172
1869	101	1879	155	1889	177
1870	119	1880	167	1890	186
1871	123	1881	162	1891	189
1872	131	1882	163	1892	190
1873	137	1883	167	1893	182

Number of deaths during period	=	59
" " retirements during period	=	84
Average annual percentage deaths	=	1·39 } 3·37
" " " other losses	=	1·98 }

The Imperial Forest School at Dehra Dun was attended during the year by 78 students, of whom 55 were sent from the provinces more directly under the Government of India and from the Madras Presidency, 9 came from Native States and Ceylon, and 14 were private students. There were 67 students of the upper class (26 in the senior and 41 in the junior course), and 11 students of the lower class (6 senior and 5 junior).

The increased attention which has been paid during the year to practical work in the School course deserves special notice; for though the final examinations showed in many instances less satisfactory results in regard to auxiliary sciences—a fact which the Board of Control rightly, I think, ascribed to an insufficient grounding in mathematical knowledge—they disclosed, on the other hand, a general improvement in the appreciation of the natural facts and observations upon which Forestry is based.

I entirely approve of the Director's proposal, which has been separately submitted, to raise the mathematical standard of the entrance examination; and I look upon any attempt to supplement at the Forest School deficiencies in general education as a waste of teaching power and time and therefore of public money.

The record of the final examination shows that out of 26 students, who during the year completed the upper-class course, 20 passed the final tests, as against 24 out of 34 in the previous year. The results of the year thus exhibit an improvement, but it is to be regretted that all the failures occurred amongst Government students. The students of the lower class passed without exception.

The maintenance of the Imperial Forest School cost during the year a net outlay of R42,559-11-10. This sum does not include the allowances made to students sent to the School from the provinces more directly under the Government of India and from the Madras Presidency, which, during the year, amounted to R33,492.

The future welfare of the School, and to a great extent the maintenance of successful forest administration in India, depends on the according of early sanction to the scheme for the reorganisation of the Subordinate Forest Service submitted to the Secretary of State, and more especially of the Rangers' Staff. So long as no organized prospects of sufficient attraction are offered to this class of officers, the influx of thoroughly suitable students to the School, which received an impetus from the opening of a wider field of promotion both by the reorganization of the Extra-Assistant Conservator class and by the allotment of a certain number of appointments in the staff of Upper Control to specially deserving officers of the Provincial Service, will prove evanescent.

V.—Forest Administration in Native States.

21. The progress made in the forest administration in Native States is not altogether satisfactory. It is true that in the following States the administration was placed under officers of the Indian Forest Service:—(*a*) Hyderabad, (*b*) Indore, (*c*) Kashmir, (*d*) the Simla Hill States, and officers of the Provincial Services were lent to the Darbars of Jeypur, Jodhpur, and Marwar. But the same difficulties which hampered the usefulness of Forest administration in the British possessions in India for years after its first introduction exercised a *much* more intense influence in most of the Native States. It is frequently necessary in the interests of successful forest administration that individual interest must suffer for the good of the community at large, and this is naturally a difficult lesson to teach and to learn in countries where forests have been regarded as existing for the use of everybody, and where, moreover, the possibility of any obligation towards unborn generations was never previously considered. The Government of India are doing all in their power to assist Native States in the development of their forest administration by the loan of officers whom they can but badly spare and by providing a free education at the Imperial Forest School to candidates from Native States.

Summary of the Revenue and Expenditure of the Forest

Budget Heads.	Bengal Presidency (British Territories).										
	Imperial.	Bengal.	North-Western Provinces and Oudh.	Punjab.	Central Provinces.	Lower Burma.	Upper Burma.	Assam.	Coorg.	Ajmere.	Baluchistan.
REVENUE.	R	R	R	R	R	R	R	R	R	R	R
I.—Timber and other produce removed from the forests by Government agency.	...	41,503	7,53,087	6,71,938	76,501	18,96,246	93,258	14,301	1,22,267	...	2,041
II.—Timber and other produce removed from the forests by consumers or purchasers.	6,289	6,95,062	9,12,594	2,96,482	12,35,687	6,10,328	11,71,165	2,61,443	60,288	18,658	1,992
III.—Drift and waif wood and confiscated forest produce.	...	8,210	22,493	20,129	4,256	89,322	45,415	3,540	...	...	4
IV.—Revenue from forests not managed by Government.	...	...	8,179	3,227	687	2,14,992	...	13,870	...	...	16,343
V.—Miscellaneous . . .	399	44,778	35,161	28,298	42,769	41,226	17,462	42,975	342	1,141	229
Total Revenue .	6,688	7,89,553	17,31,514	10,20,074	13,59,900	28,58,114	13,27,300	3,36,129	1,82,897	19,799	20,609
EXPENDITURE.											
A.—Conservancy and Works.											
I.—Timber and other produce removed from the forests by Government agency.	...	25,004	3,37,157	2,22,375	38,242	6,95,705	2,821	8,165	22,917	...	3,503
II.—Timber and other produce removed from the forests by consumers or purchasers.	...	49,157	40,526	1,721	1,24,094	13,201	6,062	15,391	...	...	1,503
III.—Drift and waif wood and confiscated forest produce.	...	4,112	9,977	5,621	23	38,305	15,194	234	...	...	...
IV.—Revenue from forests not managed by Government.	...	...	1,778	...	...	6,540	...	853	...	...	...
V.—Rent of leased forests, and payments to shareholders in forests managed by Government.	...	...	13,061	37,078	176	...	...	...	...	...	...
VI.—Live-stock, stores, tools and plant.	...	35,945	25,659	4,283	10,471	30,738	33,041	16,207	951	202	209
VII.—Communications and buildings	...	19,841	1,03,029	17,299	15,616	7,394	11,997	14,181	3,574	505	973
VIII.—Demarcation, improvement and extension of forests.	...	43,906	82,058	71,051	1,85,415	1,95,862	14,864	72,425	25,933	2,209	2,856
IX.—Miscellaneous . . .	...	5,644	21,048	1,910	3,641	3,141	31,252	4,241	362	6	269
Total A.—Conservancy and Works .	...	1,83,609	6,34,293	3,61,338	3,77,678	9,90,886	1,15,231	1,31,697	53,737	2,922	9,313
B.—Establishments.											
I.—Salaries	43,014	1,98,631	2,67,718	2,21,538	3,72,939	2,81,668	2,20,574	1,10,263	28,006	8,889	17,748
II.—Travelling allowances . .	8,270	30,886	36,382	35,337	19,446	43,526	31,663	20,173	3,736	1,644	2,494
III.—Contingencies . . .	3,864	9,804	19,818	22,062	33,852	9,041	6,391	5,392	1,381	531	942
Total B.—Establishments .	55,148	2,39,321	3,23,918	2,78,937	4,26,237	3,34,235	2,58,628	1,35,828	33,123	11,064	21,184
Charges in England . . .	7,420	...	...	...	...	...	...	...	...	...	...
Exchange on charges in England .	3,220	...	...	...	...	...	...	...	...	...	...
Grand Total of Expenditure .	65,788	4,22,930	9,58,11	6,40,275	8,03,915	13,25,121	3,73,859	2,67,525	86,860	13,986	30,497
Surplus .	...	3,66,623	7,73,303	3,79,799	5,55,985	15,32,993	9,53,441	68,604	96,037	5,813	...
Deficit .	59,100	...	...	...	...	...	...	...	...	...	9,888

DIX I.

Department in India for the year 1891-92.

Andamans.	Forest School	Forest Surveys (Imperial).	Total Bengal Presidency (British Territories).	Madras.	Bombay.	Total British Provinces.	Berar.	Forest Surveys (Berar).	Grand Total.	Budget Heads.
R	R	R	R	R	R	R	R	R	R	REVENUE
2,68,909	...	...	39,40,051	3,87,670	16,01,264	59,28,985	...	...	59,28,985	I.—Timber and other produce removed from the forests by Government agency.
3,376	..	...	52,79,364	12,43,299	15,56,719	80,79,382	5,09,526	...	85,88,908	II.—Timber and other produce removed from the forests by consumers or purchasers.
...	...	...	1,93,369	13,754	12,046	2,19,169	1,047	...	2,20,216	III.—Drift and waif wood and confiscated forest produce.
...	...	...	2,57,298	26	27,069	2,84,393	...	...	2,84,393	IV.—Revenue from forests not managed by Government.
53	1,788	257	2,56,878	49,407	87,551	3,93,896	612	...	3,94,508	V.—Miscellaneous.
2,72,338	1,788	257	99,26,960	16,94,216	32,84,649	1,49,05,825	5,11,185	...	1,54,17,010	Total Revenue.
										EXPENDITURE.
										A.—Conservancy and Works
1,20,727	...	.	14,85,616	1,63,701	7,57,718	24,07,035	...	...	24,07,035	I.—Timber and other produce removed from the forests by Government agency.
240	...	...	2,51,895	76,351	41,523	3,69,769	31,967	...	4,01,736	II.—Timber and other produce removed from the forests by consumers or purchasers.
...	...	...	73,466	3,145	229	76,840	...	...	76,840	III.—Drift and waif wood and confiscated forest produce.
...	...	...	9,171	...	202	9,373	...	...	9,373	IV.—Revenue from forests not managed by Government.
...	...	...	50,315	18,550	25,260	94,125	20,244	...	1,14,369	V.—Rent of leased forests and payments to shareholders in forests managed by Government.
15,887	3,736	1,965	1,79,291	49,366	20,698	2,49,358	4,502	...	2,53,860	VI.—Live stock, stores, tools and plant.
12,938	...	...	2,07,347	72,497	14,472	2,94,316	19,049	...	3 13,365	VII.—Communications and buildings
1,848	...	3,750	7,02,177	3,32,609	2,08,279	12,43 065	13,288	...	12,56,353	VIII.—Demarcation, improvement, and extension of forests.
4,475	3,751	3	79,743	14,651	18,641	1,13,035	1,033	...	1,14,068	IX—Miscellaneous.
1,65,115	7,487	5,718	30,39,024	7,30,870	10,87,022	48,56,916	90,083	...	49,46,999	Total A.—Conservancy and Works.
										B.—Establishments.
12,796	31,495	17,405	18,32,684	4,61,713	7,01,748 +1,241	29,97,386	84,773	...	30,82,159	I.—Salaries.
1,660	3,021	106	2,38,244	1,02,734	1,02,280	4,43,258	14,981	...	4,58,239	II.—Travelling allowances.
438	2,344	3,653	1,19,513	28,937	39,166	1,87,616	8,529	...	1,96,145	III.—Contingencies.
14,794	36,860	21,164	21,90,441	5,93,384	8,44,435	36,28,260	1,08,283	...	37,36,543	Total B.—Establishments.
...	...		7,420	...	...	7,420	...	...	7,420	Charges in England.
...	...	...	3,220	...	...	3,220	...	...	3,220	Exchange on England.
1,79,909	44,347	26,882	52,40,105	13,24,254	19,31,457	84,95,816	1,98,366	...	86,94,182	Grand Total of Expenditure.
92,429	...	...	46,86,855	3,69,962	13,53,192	64,10,009	3,12,819	..	67,22 828	Surplus.
...	42,559	26,625	...	...	...	...	...	...	...	Deficit.

STATEMENT II.

Revenue, Expenditure, and Surplus of the Forest Department throughout India during the 25 years from 1867-68 to 1891-92.

REVENUE.

Provinces.	1867-68	1868-69	1869-70.	1870-71.	1871-72	1872-73.	1873-74.	1874-75	1875-76.	1876-77.	1877-78	1878-79	1879-80	1880-81.	1881-82.	1882-83	1883-84.	1884-85	1885-86.	1886-87.	1887-88.	1888-89.	1889-90.	1890-91.	1891-92.
	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
Imperial†	543	1,159	1,436	3,107	2,334	2,771	1,225	1,144	1,405	2,490	1,36,772	16,716	17,214	18,887	27,407	30,732	32,907	26,574	14,708	4,186	4,847	4,017	4,759	6,370	6,688
Bengal	56,039	70,715	2,44,657	1,03,249	1,44,719	1,49,852	1,79,366	1,85,932	1,98,274	2,22,401	4,26,228	4,16,027	4,49,524	5,61,340	6,33,734	6,93,959	6,94,334	5,71,152	5,97,432	6,53,634	6,57,794	6,76,907	7,68,718	7,27,392	7,89,553
North Western Provinces and Oudh	5,84,503	7,85,210	8,32,945	4,24,257	11,70,900	19,39,115	19,32,677	13,63,358	12,64,356	11,50,671	12,03,108	11,26,755	10,39,966	9,42,228	10,66,094	10,13,403	16,11,383	15,72,319	14,61,495	15,73,556	12,47,454	14,62,802	17,14,159	16,37,879	17,31,514
Panjab	2,80,516	3,44,882	3,94,129	9,47,236	7,10,216	6,52,995	7,32,539	8,34,874	9,09,831	5,98,754	6,83,711	5,00,619	6,49,819	6,71,678	6,88,308	7,66,709	9,50,177	7,49,352	8,50,419	11,27,277	7,86,936	10,45,768	9,21,713	8,34,370	10,20,074
Central Provinces	3,49,490	3,50,536	4,16,020	6,58,120	5,57,128	4,81,673	5,63,367	6,60,938	7,26,176	6,61,326	6,83,910	8,52,862	10,06,724	8,50,139	11,72,884	9,77,647	9,94,769	10,27,202	10,36,894	9,57,410	10,53,369	11,80,405	11,56,181	12,13,461	13,59,900
Burma (Lower)	6,46,812	8,17,589	6,84,774	8,18,124	7,72,560	8,27,569	10,68,621	10,74,802	17,79,020	15,51,408	16,03,082	11,37,562	11,80,190	15,16,613	22,31,804	25,03,896	25,09,275	16,70,982	20,23,859	19,96,667	22,18,897	26,09,305	31,34,716	26,77,671	28,58,114
Burma (Upper)	...	.	...	...	...	...	...	...		...	...	...	...	..	...	...	...	...	...	1,08,074	2,96,876	15,79,928	18,06,070	16,44,297	13,27,300
Assam	...		...	..	.	.		65,949	61,870	81,568	1,34,326	1,61,779	1,64,335	1,68,997	1,66,054	2,48,605	2,11,445	1,80,411	1,96,656	2,12,011	2,67,312	8,03,882	3,79,498	3,26,793	3,36,129
Coorg	79,082	98,496	1,08,135	72,144	92,466	84,425	1,10,284	58,015	1,07,460	75,927	1,01,015	52,020	1,01,786	87,857	1,00,361	1,38,022	87,822	1,13,233	89,386	99,291	1,27,028	1,36,183	92,753	1,35,561	1,82,897
Ajmere	...	..	...	...	...	24	304	202	410	905	3,002	1,241	1,861	1,124	4,065	7,125	8,198	10,456	9,697	11,274	14,293	13,574	11,592	15,266	19,799
Forest Surveys (Imperial)	...	...	...		...	...	...	...	21	...	...	63	38	272	..	348	36	234	202	241	40	315	220	2,104	257
Forest School	...	..	...	...	...	..		...	...	...	.	...	..	...	...	...	...	73	273	415	777	449	1,237	1,184	1,788
Andamans	6,070	5,071	3,036	7,373	5,880	6,862	4,181	5,516	5,363	4,679	1,401	5,564	2,437	27,734	48,407	70,858	21,762	12,213	23,944	31,870	1,04,062	1,06,075	1,62,195	1,58,326	2,72,338
Total	20,03,049	24,73,668	29,85,132	30,33,610	34,56,043	41,45,286	45,97,567	42,50,730	50,54,246	43,50,129	49,76,455	42,71,203	46,13,894	48,46,869	61,39,121	64,51,305	70,85,108	50,44,204	63,04,965	67,77,906	68,19,635	91,19,610	1,01,53,811	93,80,674	99,06,351
Madras	5,81,342	5,29,185	6,97,699	5,33,412	5,76,261	5,95,188	6,13,653	5,14,401	6,77,873	5,92,573	5,50,210	6,06,788	6,26,163	7,36,880	8,06,908	9,06,442	9,53,704	11,66,916	11,98,650	12,46,911	13,74,920	15,15,006	15,57,627	17,65,403	16,91,216
Bombay	8,86,244	12,13,483	12,35,257	11,63,401	11,50,215	11,46,405	11,88,089	12,24,051	12,48,672	12,36,658	12,61,528	11,81,894	15,24,712	15,22,807	18,28,117	20,93,353	25,03,100	27,74,842	33,66,286	30,32,676	30,32,577	28,50,190	31,37,696	32,88,220	32,84,649
Total (British India)	34,68,635	42,16,336	49,18,088	47,35,423	51,82,519	58,86,879	63,99,309	59,89,182	69,80,791	61,69,360	67,88,293	60,59,890	62,64,771	71,06,555	87,74,146	94,48,100	1,05,41,912	98,85,962	1,08,69,901	1,10,57,493	1,12,27,182	1,34,84,806	1,48,49,134	1,44,64,302	1,48,85,216
Berar	53,440	84,557	1,80,397	1,77,329	1,55,543	2,56,563	2,63,256	2,60,674	2,32,782	2,53,072	2,79,236	2,88,704	3,07,500	2,66,556	2,33,511	2,92,014	3,08,218	2,97,185	3,19,851	3,26,261	4,06,447	4,07,977	4,40,541	4,87,109	5,11,185
Forest Surveys (Berar)	...	.	...	...	..	...	.	...	..	...	...	...	...	...	...	..	...	934	631	651	596	...	...	.	.
Baluchistan	.	...	...	..	...	...	..	...	...	...		...	...	14,376	18,616	5,039	4,752	6,089	14,962	14,081	14,063	5,668	13,897	15,724	20,609
Grand Total	35,22,075	43,00,393	50,98,485	49,12,752	53,38,062	61,43,442	66,62,565	62,49,856	72,13,573	64,22,432	70,67,529	63,48,594	70,72,274	73,87,488	90,26,273	97,45,153	1,08,54,882	1,01,90,170	1,12,05,845	1,13,98,486	1,16,48,283	1,38,98,451	1,53,03,572	1,49,67,135	1,54,17,010

* The figures in this statement have been revised by the Comptroller and Auditor General.
† Includes certain house receipts and undistributable and petty local items

STATEMENT II—*continuea.*

EXPENDITURE.

Provinces.	1867-68	1868-69.	1869-70.	1870-71.	1871-72.	1872-73.	1873 74	1874-75.	1875-76	1876-77.	1877-78.	1878-79.	1879-80.	1880-81.	1881-82.	1882-83.	1883-84.	1884-85.	1885-86	1886-87.	1887-88.	1888-89.	1889-90.	1890-91.	1891-92.
	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
Imperial *	33,924	33,007	54,106	51,123	66,530	67,150	79,216	81,210	48,239	44,004	98,039	63,956	73,810	65,291	77,635	87,263	98,266	96,306	88,245	86,299	78,626	86,199	81,311	85,414	65,788
Bengal	1,67,495	1,16,933	1,17,899	86,479	1,10,989	1,00,777	1,39,271	1,01,361	1,42,676	2,14,497	2,62,913	3,38,675	2,75,748	3,35,381	3,91,612	3,82,183	3,87,813	4,11,915	3,70,399	4,22,781	3,90,368	3,76,270	3,98,150	4,14,004	4,22,930
North-Western Provinces and Oudh	3,89,808	5,01,021	5,29,422	8,10,073	11,10 071	11,71,666	11,90,794	10,61,302	7,36,979	8,61,362	7,28,926	8,09,977	7,16,594	6,79,574	9,16,212	8,39,025	10,41,885	10,20,101	9,74,519	9,19,580	8,30,748	8,44,544	9,63,151	9,19,195	9,58,211
Punjab	2,88,029	3,17,634	7,41,432	11,95,655	7,07,619	8,90,389	6,11,556	6,58,933	5,56,911	5,25,659	5,20,631	5,23,554	4,80,676	4,95,368	5,16,269	5,60,750	6,53,146	5,58,070	6,75,483	7,16,510	6,77,912	5,93,885	6,45,855	6,53,041	6,40,275
Central Provinces	2,18,434	3,19,128	4,79,930	3,17,928	2,31,633	2,50,578	2,85,939	2,94,419	3,73,327	2,90,295	3,22,034	3,93,758	5,22,571	4,95,512	4,97,013	4,12,247	4,36,058	4,95,821	4,45,432	4 99,233	5,52,939	6,68,697	6,96,445	7,35,554	8,03,915
Burma (Lower)	3,30,526	4,21,333	4,22,105	4,00,851	3,79,217	3,36,759	4,75,304	6,63,547	8,15,659	10,05,554	8,58,231	7,18,102	7,53,490	7,12,568	11,50,224	12,28,955	12,17,824	12,12,233	11,50,952	10,75,830	10,32,694	12,31,944	13,32,844	10,86,474	13,25,121
Burma (Upper)	..	...	...	..	...	.	...	...		.	...	...		...	...	...	...	...	..	2,188	1,21,152	7,85,129	2,73,809	3,02,315	3,73,859
Assam	...	...	..	...		...	..	60,367	63,397	90,520	1,01,153	1,26,028	1,32,829	1,42,725	1,65,361	1,71,823	1,99,562	1,97,699	2,11,494	2,12,287	2,26,892	2,09,905	2,57,129	2,83,852	2,67,525
Coorg	13,722	17,843	33,069	23,727	70,178	29,478	45,952	37,999	40,168	33,692	36,268	31,829	55 165	56,487	59,796	64,770	75,023	76,951	65,690	74,083	72,629	80,175	72,420	65,818	86,860
Ajmere	..	...	...	...	..	13,051	17,932	15,281	27,346	22,460	14,928	13,445	13,750	12,423	13,954	11,284	14,574	16,316	16,469	20,744	18,897	15,676	12,701	12,720	13,986
Forest Surveys (Imperial)	..	...	...	...	...	...	50,556	78,090	58,930	58,929	60,165	60 325	46,878	40,335	42,189	41,595	30,940	19,823	19,180	28,348	32,868	22,164	21 188	24 324	26,882
Forest School	...	..	...	...	...	...	...	...		...			...	...	...	...	.	22,568	24 239	30,831	33,129	32,961	29,646	35,191	44,347
Andamans	.	...	150	.	1,651	1,896	...	...		1,307	1,093		7,177	2,160	2,306	1,840	12,161	22,760	37,035	25,769	62,679	57,295	94,975	1,30,052	1,79,909
Total	14,46,936	17,28,902	23,73,103	28,87,155	26,79,888	28,64,728	29,05,523	30,52,589	28,63,632	31,43,279	30,04,442	30,82,913	30,72,691	30,37,324	38,35,871	39,01,740	41,67,252	41,50,563	40,79,137	41,14,548	41,31,532	50,04,844	48,79,615	47,47,954	52,09,608
Madras	4,02,671	4,01,617	4,21,316	4,47,267	3,91,921	5,48,746	4,74,920	5,95,941	5,92,039	6,35,360	5,65,624	4,95,914	5,48,527	5,19,270	6,03,419	6,45,352	7 86,733	8,96,505	9,37,972	11,53,122	11,29,212	12,20,794	11,61,237	12,46,913	13,24,254
Bombay	5,55,039	6,31,228	5,56,015	6,39,759	5,97 831	7,25,031	7,21,591	8,36,675	7,94,141	8,38,979	8,77,716	10,04,923	10,76,989	11,57,347	11,69,181	12,78,770	15,68,172	17,73,723	18,39,461	19,52,910	19,44,035	16,93,962	17,70,691	18,69,887	19,31,157
Total (British India)	24,04,649	27,61,745	33,50,440	39,74,182	36,67,640	41,38,505	41,02,037	44,85,205	42,49,812	46,22,818	44,47,782	45,83,788	46,98,207	47,23,941	56,08,471	57,25,862	65,18,157	68,25,791	68,56,570	72,20,580	72,04,750	79,19,600	78,11,543	78,64,754	84,65,319
Berar	18,869	34,105	81,569	81,972	1,00 829	83,681	86,350	91,389	91,449	94,652	1,09,968	1,07,350	1,10,508	1,28,968	1,52,985	1,55,054	1,56,779	1,52,649	1,59,242	1,71,704	1,83,765	1,70,212	1,76,549	1,68 921	1,98,366
Forest Surveys (Berar)	..	...	...	...	...	...	..	..	...	.	...	...	...	...	...	...	15,043	34 804	42,940	45,472	42,698	23,955	6,464	.	...
Baluchistan	.	...	...	...	...	..	...	.	...	...	...	..	...	16,416	17,682	11,962	16,911	13,268	15,799	17,836	17,753	15,994	17,962	29,150	30 497
Grand Total	24,23,318	27,95,850	34,32,009	40,56,154	37,68,469	42,22,136	41,88,387	45,76,594	43,41,311	47,17,470	45,57,750	46,91,136	48,08,713	48,69,325	57,79,138	58,92,878	67,86,890	70,26,510	70,74,551	74,55,592	74,48,366	81,29,761	80,12,518	80,63,125	86,94,182

* Includes pay of Inspector General of Forests, certain home charges, and undistributable and petty local items.

STATEMENT II—*concluded.*

SURPLUS.

Provinces.	1867-68.	1868-69	1869-70.	1870 71.	1871-72.	1872-73.	1873-74.	1874-75.	1875-76.	1876-77.	1877-78.	1878-79.	1879-80.	1880-81.	1881-82	1882-83.	1883-84.	1884-85.	1885-86.	1886-87.	1887-88.	1888-89.	1889-90.	1890-91.	1891-92.
	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
Imperial*	−38,381	−31,848	52,670	−48,316	−68,196	−68,379	−77,961	−80,036	−46,774	−41,514	38,673	−47,240	−56,596	−46,404	−50,228	−53,536	−65,359	−69,732	−73,537	−82,112	−73,779	−82,182	−76,552	−79,044	−59,100
Bengal	−1,11,456	−45,218	1,26,758	16,770	33,730	49,075	40,082	84,571	55,598	7,904	1,63,315	77,352	1,73,776	2,25,959	2,39,122	3,11,776	3,06,521	1,50,237	2,27,033	2,30,853	2,67,426	3,00,637	3,70,568	3,13,388	3,66,623
North-Western Provinces and Oudh	1,94,697	2,84,189	3,03,523	−3,85,816	60,828	7,61,419	7,41,883	3,02,056	5,27,377	2,89,303	4,74,182	3,16,778	3,23,372	2,62,654	1,49,882	1,74,378	5,69,498	5,52,218	4,86,976	6,53,976	4,16,706	6,18,258	7,51,008	7,18,694	7,73,303
Punjab	−7,589	27,248	−3,47,303	−2,48,419	2,597	−2,37,374	1,20,983	1,75,891	3,52,920	73,095	1,63,683	−22,935	1,69,143	1,76,310	1,72,039	2,05,959	2,57,031	1,91,282	1,74,936	4,10,767	1,09,024	4,51,883	2,75,858	1,81,329	3,79,799
Central Provinces	1,31,056	31,410	−58,910	3,40,192	2,25,495	2,31,035	2,82,428	3,66,489	3,52,849	3,71,031	3,61,876	4,59,104	4,84,150	3,54,627	6,75,871	5,65,400	5,58,711	5,31,381	5,91,462	4,58,117	5,40,430	5,11,708	4,59,736	4,77,907	5,55,985
Burma (Lower)	3,16,286	3,93,266	5,62,668	4,17,273	3,93,182	4,90,810	5,93,317	4,11,255	9,63,361	5,45,854	7,41,851	4,19,160	4,26,700	8,04,045	10,81,580	12,74,941	12,91,451	4,58,749	8,72,907	9,22,837	11,86,203	13,77,361	18,01,872	15,91,197	15,32,993
Burma (Upper)	...	...	..		...	..	..	..	...	...	—	...	...	...	...	...	...	...	...	1,05,886	1,75,724	7,94,799	15,32,270	13,41,982	9,53,441
Assam	..	...	...		..	..	...	5,582	−1,527	−8,952	33,173	35,751	31,506	26,272	693	67,782	11,883	−17,285	−14,838	−276	40,420	93,977	1,22,369	42,941	68,604
Coorg*	95,360	80,648	75,071	47,397	22,238	51,946	64,332	20,016	67,292	42,235	64,747	17,191	46,621	31,370	40,568	73,252	12,799	36,282	23,696	25,203	54,399	56,008	20,333	69,743	96,037
Ajmere	...	...	...	...	...	−13,000	−17,628	−15,079	−23,935	−21,555	−11,924	−12,204	−11,889	−11,299	−9,889	−4,158	−6,376	−5,860	−6,772	−9,470	−4,604	−2,102	−1,109	2,546	5,813
Forest Surveys (Imperial)	..	..	...	...	..	.	59,556	−78,090	−58,909	−58,929	−60,165	−60,262	−46,840	−40,053	−42,489	−41,247	−30,904	−19,589	−18,978	−28,107	−32,828	−21,819	−20,968	−22,220	−26,625
Forest School	...	...	...	...	..	...	...	.	...	...	..	...	...	...	...	...	.	−22,495	−23,966	−30,416	−32,352	−32,512	−28,409	−34,007	−42,559
Andamans	6,070	5,071	2,885	7,373	4,229	4,966	4,181	5,516	5,353	3,372	205	5,564	−4,740	25,574	46,101	69,018	12,601	−547	−13,091	6,101	41,383	48,780	67,220	28,274	92,429
Total	5,56,113	7,44,766	6,12,023	1,46,454	7,78,155	12,80,553	16,92,041	11,98,141	21,90,614	12,01,850	19,72,013	11,88,259	15,35,203	18,09,045	23,03,250	26,49,565	29,17,856	17,93,641	22,25,828	26,63,358	26,88,152	41,14,766	52,74,196	46,32,720	46,96,743
Madras	1,78,668	1,27,568	2,76,333	86,145	1,84,340	46,442	1,38,733	−81,540	85,834	−42,987	−15,314	1,10,874	−76,641	2,17,610	2,03,189	2,61,090	1,66,971	2,70,411	2,60,678	93,789	2,45,708	2,94,212	3,96,390	5,48,495	3,69,962
Bombay	3,29,205	5,82,257	6,79,242	5,28,642	5,52,381	4,21,374	4,66,295	3,87,376	4,54,531	3,87,679	3,83,812	1,76,971	4,47,723	3,55,460	6,58,936	8,11,583	9,38,928	9,93,119	15,26,825	10,79,766	10,88,572	11,56,228	13,67,005	14,18,333	13,53,192
Total (British India)	10,63,986	14,54,591	15,67,648	7,61,241	15,14,879	17,48,374	22,97,272	15,03,977	27,30,979	15,46,542	23,40,511	14,76,101	20,59,567	23,82,115	31,65,675	37,22,238	40,23,755	30,60,171	40,13,331	23,36,913	40,22,432	55,65,206	70,37,591	65,99,548	64,19,897
Berar	34,771	50,452	98,828	95,357	54,714	1,72,932	1,76,906	1,69,285	1,41,282	1,58,420	1,69,263	1,81,354	1,96,994	1,37,588	80,525	1,36,960	1,51,439	1,44,536	1,60,609	1,54,552	2,22,682	2,37,765	2,63,992	3,18,188	3,12,819
Forest Surveys (Berar)	...	..	...	...		...	..	...	...	...	..	...	...	—	...	.	−15,043	−33,870	−42,309	−44,821	−41,502	−23,935	−6,461	..	
Baluchistan	...	..	...	...	...		...	...	..	..	...		.	−2,040	934	−6,923	−12,159	−7,177	−837	−3,755	−3,690	−10,326	−4,065	−13,726	−9,388
Grand Total	10,98,757	15,05,043	16,66,476	8,56,598	15,69,593	19,21,306	24,74,178	16,73,262	28,72,262	17,04,962	25,09,779	16,57,458	22,56,561	25,17,663	32,47,135	38,52,275	41,47,992	31,63,660	41,30,794	39,42,894	41,99,922	57,68,690	72,91,054	69,04,010	67,22,828

* Includes pay of Inspector General of Forests, certain home charges, and undistributable and petty local items.

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